Among the Tungus and Yakut

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Experiences and Results of the Olenek Expedition of the Imperial Russian Geographical Society in St. Petersburg

[Unter Tungusen und Jakuten. Erlebnisse und Ergebnisse der Olenék Expedition der Kaiserlich russischen Geographischen Gesellschaft in St. Petersburg.]

by Ferdinand Müller

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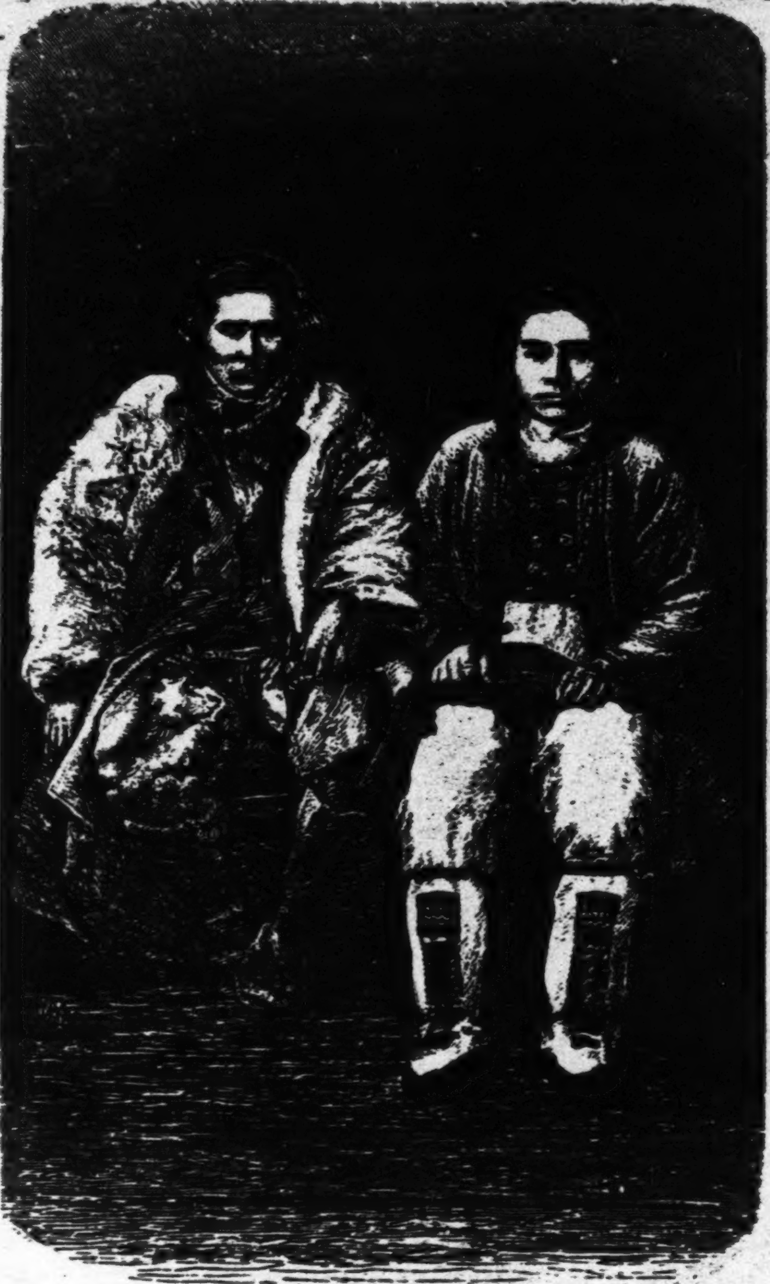

Tungus of the Níshnaja /Nizhnyaya/ Tunguska

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Foreword

0-80 Frequently in the course of the decades just passed the attention of the entire educated world has been directed toward the far north of our globe; in particular the journeys of Nordenskiöld and his companions, crowned by the most magnificent success, and the northeast passage, finally gained by him after centuries of fruitless attempts, have continually turned the eyes of the scholars, as well as those of the laity, to the barren northern shores of the Asiatic continent.

The area of the mouth of the Lena in particular has incessantly preoccupied the European and even more the American press in recent months, since in December, 1881, the first report concerning the shipwrecked landing of the long-lost polar navigator "Jeannette" was transmitted by the Siberian telegraph, and soon afterwards various American expeditions were sent to search for the lost crew and Captain de Long along the lower Lena. Moreover this region has aroused further interest in that in the fall of 1882 one of the polar stations set up by international agreement in accordance with Weyprecht's proposal will start its activity here. This expedition, equipped by the Russian government (the second Russian polar station is on Nówaja-Semljá /Novaya Zemlya/), at whose head stand the gentlemen Captain Jürgens, Dr. Bunge, and Eigner, has already been in /vi/ Irkutsk for some time, from where it is likewise to depart for its destination by going up the Lena.

114 Under such circumstances I consider it to be a good time to
121 publish herewith what I myself have experienced and found in these regions. A large part of the present work was done on the journey itself and only slightly changed later, in order not to lose the freshness of direct impressions.

While the arctic lands readily accessible by ship, such as Spitsbergen and the coasts of Greenland, have often been described and therefore are relatively well known to the public, only a little information about the interior arctic lands of Asia has reached wider circles. The distinguished works by Baron Wrangel and v. Middendorff -- the latter in particular, as a consequence of their considerable scope and corresponding cost --

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114 have become known almost solely in strictly scientific circles,
121 and thus my publication may fill a substantial gap in the popular-scientific travel literature, in that it substantially supplements Czekanowsky's brief reports already published earlier in the Russian language in the publications of the Imperial Russian Geographical Society and, in part, also in the German language in the "Russischen Revue."

128 The scientific appendices will be acceptable to both the expert and the educated laity. They contain observations which refer to a broader area and, as a consequence of this, could only with difficulty be incorporated in the actual travel account, without unduly breaking the thread of the story.

St. Petersburg, in May, 1882.

F. Müller.

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of the northern part of East Siberia between the Jenissei /Yenisei/ and Jana /Yana/ rivers. According to the survey by Ferdinand Müller and Alexander Czekanowsky. 186-191

/1/

Introduction

114 Toward the end of the year 1872, chiefly at the suggestion
[101] of the academician Friedrich Schmidt, the Imperial Russian Geographical Society in St. Petersburg decided to send out an expedition to explore the practically completely unknown Lower (níshnaja /nizhnyaya/) Tungúska and Olenék rivers, principally with reference to geology, and chose the geologist Alexander Czekanówsky of Irkutsk, well known through his excellent investigations of the geological conditions of the Irkutsk government and the Baikal Mountains over many years, to carry out this plan. Besides a young man experienced as a collector and preparator, Mr. Ksenshopólsky, a capable topographer from Irkutsk, Mr.
[101] Nachwálnych, was to accompany the expedition. Before the departure of the expedition in March of 1873, Czekanówsky, with whom I had frequently undertaken shorter trips, particularly to Lake Kossogól, suggested to me that I, at that time an instructor of mathematics and physics in the government Gymnasium in Irkutsk, also go along on this trip to check the topographical data by means of astronomical observations and to make magnetic observations, which here, /2/ relatively near the Siberian maximum of magnetic intensity, were bound to be of great scientific interest.

[122] Through the good offices of the Geographical Society, I was granted permission by his Excellency the Minister for the Enlightenment of the Masses to take part in this expedition and was also given the necessary funds, and therefore by the middle of May I was able to follow the other gentlemen, whom I joined in the upper part of the Lower Tungúska in the village of Népa. During the first days of September (here, as elsewhere, also in reporting meteorological data, the old style) we reached the Jenisseí /Yenisei/ not far from Turuchansk /Turukhansk/ with rich yields, and, after a prolonged stay in the city of Jenisseísk /Yeniseisk/, we arrived in Irkutsk again at the beginning of November. After I gave up my service connection here at the Gymnasium, we set out from Irkutsk as early as December, this time only Czekanówsky and myself, to carry out the second part of our expedition, the exploration of the Olenék, and we did not return until January, 1875.

121 The following pages contain a description of this latter journey,
[114] popularized for the general public. Included are reminiscences of the Tungúska journey and some of the findings of Czekanówsky,

Y /2 cont./

121 who, in the year 1875, again visited the lower part of the Olenék
[114] and the Lena to complete his observations, while at the same time I took part in the surveying of Siberia, likewise started by the Geographical Society.

Y
[126] Since East Siberia, and especially the part under consideration here, is apt to be a complete terra incognita to the foreign reader to an even greater extent than to the Russian, I shall /3/ also add here for better orientation a brief survey of the history, rather uneventful in itself, of this northernmost region of Russia, with reference to the general map of the territory between the Jenisseí and Jana /Yana/ appended to this volume, which, drawn up according to our data, was reproduced by the Imperial Russian General Staff.

Y
175 The stretches of land of interest to us were discovered by Rus-
648 sian Cossacks in the first half of the seventeenth century. The
167 city of Mangaséja /Mangazeya/ was founded on the river Tas /Taz/ in Samojeden /Samoyed/ country about the year 1600
[361] under the rule of Czar Boris Fedorovich Godunov. From here the Cossacks soon penetrated to the Jenisseí, founded there in the year 1607 near the mouth of the Turuchán /Turukhan/ River a settlement named after it, to which the entire trade of Mangaséja was later directed, and soon afterwards also discovered the mouths of the Jenisseí and the Pjássida River lying to the east. Spurred on by ambition and also not forgetting their pockets, Cossacks in the following years gradually pushed up the (Lower) Tungúska, emptying into the Jenisseí near Turuchánsk, before them, as Fischer (1) relates, the hunters ("are rovers who band together in order to catch game"). The Lena was reached probably as early as 1620 (even earlier by the hunters) by crossing the watershed, barely 30 versts wide here, from the present village of Podwolótschnaja /Podvoloshnaya/ on the Tunguska and therefore emerging about 50 versts below the present Kirensk.

T
648 This was not accomplished without battle with the resident
721 tribes. Fischer tells about a band /4/ of 189 hunters: "Never-
175 theless they were occasionally sharply rapped on the knuckles

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Y
[113] 1. Johann Eberhard Fischer, Sibirische Geschichte /Siberian History/, St. Petersburg, 1768. 2 vols. The following very characteristic quotations are taken from this work.

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T /4 cont./

175 by the Tungus lying in wait for them, and the light went out for
641 one or another of them if he strayed too far from the band."
721 In another place it is likewise said about the ancestors of our now
T quite harmless Tungus friends: "These (the Tungus on the
[181] Tschája /Chaya/) told him much about those Tungus living on
the Nishna-Tunguska, that they were a wild and stouthearted people, that they had sometimes picked a quarrel with a hundred
Russians and beat them."

Y In the year 1620, through the Tungus, the Cossacks received
648 the first report about the Wiljúi /Vilyui/, its nearness to the
175 Tunguska, and about the Jakuten /Yakut/ on the lower Lena.
They considered this news so important that they reported it to
Tobólsk, at that time the capital of Siberia, and to Moscow.
Instructions seem to have failed to appear for a long time, for
it was not until the year 1630 that Martin Wassíljew /Vasilyev/
was sent out to the Jakuten with 30 men; then, navigating down
the Wiljúi, he fulfilled his mission and took from the Jakuten
the first tribute (jassák /yassak/), probably more for his gain than
for that of the crown, for although, personally sent to Moscow, he
had boasted there after his return "to bring the whole Jakut nation
under his heel, provided that for this purpose he were given 40
additional men for reinforcement," and although this reinforcement was granted, Wassiljew was dismissed immediately afterwards, and a Circassian, Stepán Korýtow, was named as head of
T the expedition, which was undertaken in the year 1632.

[648] In the meantime, however, the Jenisseisk Cossacks, who had
[721] gradually gone up the Upper Tunguska (Angará) and the Ilím, but
not without battles with the Tungus and Burjäten /Buryat/, had
Y reached the upper Lena /5/ and navigated down to the mouth of
648 the Kírenga, near the present Kirensk. They, too, heard about
439 the Jakuten and their wealth in livestock, and, as Fischer says
175 of one of their leaders: "That succulent tidbit made his mouth
water." But it was not until the year 1632 that the sotnik Peter
Bekétow went down the Lena and, with a handful of Cossacks,
established a small fort 15 versts below the present Jakutsk
/Yakutsk/. That the tidbit was indeed succulent is clear from
Fischer's words: "How profitable the trade must have been in
this early period may be gathered from the fact, among others,
that the Jakuten paid for the copper kettles, which they preferred
over other Russian wares, with as many sables as could be put in
each Kettle.

/5 cont./

Y each kettle." Unfortunately discord now arose among the Rus-
648 sians themselves. The above-mentioned expedition from
175 Turuchansk had traveled down the Wiljui, captured a Cossack
721 division sent by Bekétow, imposed on various Jakuten tribes who
Y had previously paid their jassak to Jakutsk another such, and
[726] finally set up a winter camp on the Aldán. The Jakuten /Yakut/,
[728] outraged at such treatment, besieged the Jakutsk fort in January
and February of 1634, and little was needed for the garrison to starve
to death. Fortunately, however, "the Jakuten became bored and
went away."

Y
167 The fight ended, however, when Korýtow was taken prisoner
175 and sent back to Turuchansk, but several Jakuten tribes, dis-
728 contented with the new regiment, went in search of more distant
regions--some emigrated to the Wiljui, others to the Arctic
Ocean, and still others to the present Oljókminsk /Olekminsk/
Y district. The enterprising Jenisseisk Cossacks, however, did not
648 rest /6/ on their laurels. In the year 1636 Jelissei /Elisei/ Búsa
175 was sent out from Jenisseisk under orders to visit the rivers flow-
ing into the Arctic Ocean and to impose jassak on the dwellers
along them. With ten Cossacks and 40 hunters, after he had
Y wintered in Oljóminsk, he went to the mouth of the Lena in the
-T following spring and from there, after a short journey, reached
[648] the mouth of the Olenek. "Here he went upstream until he met
[175] some Tungus, from whom he seized five sorok (5 x 40 = 200)
sables as tribute; and, since winter was at hand, he built for
himself and his people a hut for winter quarters." In the mean-
time, however, the Jakutsk Cossacks had also discovered the
Olenek. From the Wiljui, which, after the expulsion of the
Turuchansk people, was now open to them, they went up the
Marchá /Markha/ and thus reached the upper part of the Olenek,
where, in the same year that Busa appeared as conqueror on the
lower course, they carried on the same business as he did, without knowing about him. In the following spring Busa traveled
overland to the Lena, which he reached near Siktjach /Siktyakh/
(at 70° latitude), again built himself boats, and navigated with
them again down the Lena, but then to the east, entered the
Jána /Yana/, and imposed jassak on the dwellers along this
river, as well as, in subsequent years, on the natives living
farther to the east on the Arctic Ocean. He did not return to

/6 cont./He did not return to

648 175 Jakutsk until the year 1642. Also along the Jana, while Busa lived on the lower part, the upper part was conquered by the Jakutsk Cossacks, who traveled there on horseback across the mountains from the Aldan.

So much for the oldest authenticated history of these northern regions. Russian dominance became stronger and stronger, especially after /7/ the constant strife between the various Cossack parties was brought to an end as a result of the appointment in Jakutsk of an independent wojewoden /voivode/ in the year 1641.

175 114 I have only a few more words to add about the scientific conquest of the region in question. It began first with Peter the Great, although there were earlier maps of Siberia and routes of march prepared by Rémesow /Remezov/, whose atlas still exists in manuscript, but no longer meets current demands. Peter the Great sent geodesists to Siberia and took care of their training. Especially important for us is the expedition of Messerschmidt, who was originally called upon by Peter for the first founding of an academy of the sciences and in 1719 was sent to Siberia, where, on numerous journeys up to 1727, he collected valuable material for the natural sciences, as well as undertaking a great many latitudinal measurements. On the Lower Tunguska Messerschmidt was our first and only predecessor; he went up the river from the Troitzky Monastery to Podwolotschnaja /Podvoloshnaya/.

Forever memorable are the expeditions under the leadership of Bering, carried out with the utmost endurance for ten years, from 1733-1743, during the reign of the Empress Anna Ivanovna, which finally resulted in the complete survey of the north and part of the east coast of Siberia. Próntschischtschew /Prontschischev/ and Charitón Láptew /Laptev/ in particular worked from the Lena toward the west; the former and his wife succumbed to the hardships at the mouth of the Olenek. Of the scientists accompanying this great expedition, the naturalist Gmelin, Sr., the historiographer Müller, and the astronomer de l'Isle /De Lisle/ de la Croyère, with whom Steller and Fischer were later associated, none came into the territory explored by us. For this, /8/ besides the aforementioned Messerschmidt, we had as predecessor only the present Bishop of Jakutsk, Dionýssij, who, as the missionary Chitrów, visited the lower Olenek and published (in the publications of the Siberian Section of the

/8 cont./

175 Imperial Russian Geographical Society) a description of the
114 regions visited by him, which is most interesting in many respects.

On the other hand, for the border areas, especially the lower Jenisseí, there is a whole series of interesting expeditions, of which I shall mention here only the most noteworthy: the ethnographer Castrén, the geologists Fr. Schmidt and Lopatin, and, in quite recent times, Nordenskiöld and his party have brought back to us rich scientific material from these remote regions. Next to Pallas, however, who personally saw only the southern parts, Siberian science is most deeply indebted to A. v. Middendorff, the famous explorer of the Taimyr country, who, of all the land travelers, advanced farthest on the continent of Asia, almost to 76° latitude.

In the eastern part of our territory, there are principally to be mentioned the expeditions of Anjou and Baron Wrangel in the years 1821-1823, the former of whom in particular also determined more accurately astronomically the mouths of the Lena and the Olenek, as well as, in the south, the 1828 and 1829 expeditions of Hansteen and his companion Due, who continued his explorations to Wiljuisk /Vilyuisk/, and Erman's, who traveled by way of Jakutsk /Yakutsk/ to the Pacific Ocean, and finally the expedition of Maack and his fellow travelers in the Wiljui /Vilyui/ region, outfitted by the Siberian Section of the Imperial Geographical Society in 1854, the results of which are but little known up to now. (A volume containing meteorological /9/ material appeared in the Russian language in 1877 in Irkutsk.)

114 There still remains for me the sad duty of dedicating a few lines to the memory of my faithful traveling companion -- Alexander Czekanowsky. He was not permitted to work over even a part of the rich geological material brought back by him, not permitted to carry out his favorite plan and to open up the territory of the Anábara /Anabar/ and the Dshésse, still completely unknown scientifically. Still in the strongest years of manhood at the age of 45, he ended his life, most unselfishly dedicated to science, on October 18/30, 1876, in a fit of melancholy, the gradual development of which had often caused me serious concern on our joint travels. Involved in the Polish uprising of the sixties, Czekanowsky had come to Siberia involuntarily, and here, in spite of long years of the most oppressive

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14 conditions, he busied himself incessantly with geology, with which he had fallen in love at the universities of Kiev and Dorpat, most eagerly observing and collecting. His keen observations and his invaluable collections earned him the sympathies of the Petersburg scholars; he secured the means for more and more extensive exploratory journeys and finally, after their termination, returned to Europe in the spring of 1876. Afterwards, in recognition of his great scientific accomplishments, he was completely pardoned by His Majesty the Emperor, and he was even permitted unhampered residence at court -- an exception from his fellow sufferers. His life seemed destined to become ever happier; from all sides he was met with warm sympathy; a trip to Sweden in the course of the summer brought him in /10/ contact with foreign colleagues. Seemingly strengthened and cheered, he returned to St. Petersburg. Then suddenly that malady, the seed of which had long been present, appeared with terrible force, and before his many friends could have an inkling of it the catastrophe followed. Peace to his ashes! Honor to his memory!

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First Chapter

140 Departure from Irkutsk. -- Travel papers. -- Trade on the Lena. -- High grain prices. -- Planned navigation on the Tunguska. -- Mild winter. -- Arrangement of the post stations. -- Kirensk. -- Bánschtschikowa. -- The Dmítrjew brothers. -- Arrival in the village of Podwolótschnaja on the Lower Tunguska. -- The villages of Népa and Preobrashénskoje. -- Unscrupulous trader. -- Agriculture. -- Stay in Móga and Jerbochotschón. -- Weather. -- Scarcity of birds. -- Preparations for the journey.

122 On December 29 (old style), 1873, all the preparations for the journey were finally completed. Since the evening before, two large, mat-covered pack-sleds (koschewá), loaded with the principal part of our baggage, had stood ready in the yard; the third sled, intended for Czekanowsky, me, and some hand luggage, was to be procured from the post and changed at each

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122 station. All that remained was to take leave of Irkutsk and, with it, European civilization more or less. Many friends had appeared for this purpose, among them four representatives of the Baltic provinces (Dr. of Med. Holtermann, Estonia, Captain Unterberger and Gymnasium teacher Lehmann, Livonia, and Dr. of Phil. Neumann, Courland). Again the champagne corks popped, just as they had a few days before when the Administrative Committee of the Siberian Section of the Imperial Russian Geographical Society had given us a farewell dinner spiced by the happiest of moods, merry songs resounded, /12/ reminiscences of our student days in Dorpat, and, amidst the notes of the old school song, "Bemooster Bursche zieh' ich aus /old students, I set out/," we got into the sleds and with a happy hurrah went out into the winter night, not into the suffering and joys of philistine life, to be sure, but, on the contrary, as one would say at home, into the inhospitable wildernesses of the icy far north, for us an almost unexplored and inexhaustible field for our scientific activities.

The first station, still very mountainous, was quickly put behind us. For about nine versts the route ascended sharply uphill almost continuously, until it reached its culmination point on the heights known to the people of Irkutsk as wessjólaja gorá, that is, pleasure mountain, from which on clear days one enjoys a magnificent panorama of the Baikal Mountains as far as the Tunkin Alps, an alpine landscape of several hundred versts in extent, which often, even in the middle of summer, is projected with snow-covered peaks on the clear horizon. Only from the next station of Chomutówo /Khomutovo/ on does the region become more level and only very gradually climbs to the highest point, which the post route reaches between the stations of Olssónowskaja and Bajandájewskaja. The actual watershed between the Angará and Léna, lower than the above-mentioned ridges, lies somewhat farther on, about eight versts beyond Bajandájewskaja. Although the roads were very busy and at almost every station we met travelers, especially merchants who were hurrying to Irkutsk for the annual fair, we were excellently assisted, thanks to the very influential papers with which we

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122 were provided. I regard it as my duty to mention here with gratitude the great generosity with which the local authorities come to the help of scholarly expeditions and without which such undertakings would scarcely be possible, in view of the avarice of the inhabitants, far more developed here than in European Russia.

/13/ Outside of the customary crown podoróshnajas /podorózhnaias/ (1), we also had several blanks, that is, orders

> 1. Orders for a certain number of post horses; only for the bearer of such papers are the horses changed at the post stations.

for the country horses (obywátelskija lóschadi /obyvátelskiia lóshadi/) in the absence of post horses (2), and furthermore an

> 2. The former are usually better than the latter, for they are primarily intended for the use of the rural police.

open letter (otkrýtoje predpissánje /otkrýtoie predpisánie/) from the governor general of East Siberia to all persons concerned, in which they were ordered to give every assistance, apart from the fact that the governor general had already sent similar orders to the isprávniks /ispravniks/ (district chiefs) of Kirensk and Wiljuisk /Vilyuisk/, through whose territory we would pass.

On the morning of December 31 we reached the market place of Kátschuga /Kachuga/ on the Lena, known for the annual fair that takes place here every year in May, to which the Irkutsk merchants bring to the people in the country the goods no longer very salable there -- at respectable prices, which, of course, become all the higher the farther downriver they go. In May of 1873 I embarked here with a well-known Irkutsk merchant on his merchantman (páwos), with which he intended to take down the Lena to Oljókminsk /Olekminsk/ the goods not salable in Katschuga. Other merchants go down to Jakutsk /Yakutsk/. In every village

/13 cont./

122 of any importance they stay for a longer or shorter time and open their trading, if they are not in a special hurry because of an imminent annual fair somewhere, for whoever is on the spot first can, of course, in view of the lack of competition, get the highest prices. The dwellers along the Lena are completely dependent on these merchants and must /14/ pay the prices set by them, but for their part they use a means to get exorbitant profits out of the pockets of the merchants, the use of which I have frequently witnessed and which makes a most comical impression on the spectator who is not involved. Namely, the Lena is very shallow and, in addition, like all great rivers, continuously changes its channel, so that all the merchants hire pilots from Kátschuga on. The latter, very well acquainted, of course, with all the dwellers along the river, know very skillfully how to arrange it so that the barges are stranded just where help can be obtained from the shore inhabitants. There then begins a bargaining which always ends in such a way that the barge's owner has to pay a good sum, up to a hundred rubles, if he does not want to be driven up on the sand beyond rescue, in which case he has the further displeasure of watching as his more fortunate colleagues, quickly carried on by the stream, hurry to the next profitable trading point. Before the trader decides on such a sacrifice, all other means of assistance are usually exhausted first, among which there is in particular the application of "baking powder" (ople-úcha). This most peculiar name here designates a long board which is fastened sometimes at this place on the vessel, sometimes at that one, as needed, and then, turned on its narrow edge by means of a noose, increases the force of the water by damming it.

The next station beyond Kátschuga is the district capital, Wercholénsk /Verkholensk/, the seat of an isprawnik, but otherwise hardly more important than Kátschuga. We greeted the morning of the new year of 1874 at the station of Ustjilgínskaja, noteworthy as the departure point of the entire grain trade on the Lena, in that the /15/ grain brought here from the Angará, from the Balagánsk district, is shipped downriver.

/15 cont./

It would not be uninteresting for the European reader to learn some Siberian grain prices on this occasion, for the conditions here characterize them very well. In Irkutsk, upon our departure, a pood (40 pounds) of rye flour cost 80 kopecks, in Kirensk, on the other hand, 2 rubles 12 kopecks, and this was the crown price, at which the crown provided for the rural population from its storehouses in case of need; the merchants got up to three rubles. And this in a country in which plenty of grain cultivation is carried on and which still lies about 400 versts south of the actual arctic limit of grain cultivation. In Turuchansk /Turukhansk/, on the other hand, almost at the Arctic Circle and at least 600 versts in a straight line from Wórogowo /Vorogovo/, where we found the last attempts to raise a meager grain crop along the Jenissei /Yenisei/, at the time of our stay there in September of 1873 the steamboat company's price for a pood of rye flour was only 67 kopecks, and in Jenisseisk /Yeniseisk/ about 40 kopecks. To be sure, it is to be kept in mind in this connection that the entire Jenissei is supplied directly from the Minussinsk /Minusinsk/ district, the granary of East Siberia, just as one also finds other Minussinsk products in quantity in Jenisseisk, such as cucumbers and watermelons, and furthermore that the Jenisseisk steamboat service extends to the mouth of the Jenissei. If it should be possible to navigate the Lower Tunguska in small steamers from where it empties into the Jenissei to the vicinity of the Lena [and our journey in the summer of 1873 has shown that the much-discussed rapids do not put any insurmountable obstacles in the way of such undertakings], then perhaps later the Lena region, even though by a long circuitous route, might /16/ share in the products of the far more favored Jenissei region and, by means of the ever increasing trade from Europe directly to the mouth of the Jenissei, following Nordenskiöld's successful efforts, also in the European goods. The Jenisseisk merchants, particularly the participants in the steamboat company, do not seem to be averse to putting such a connection into operation when they are convinced of the possibility of it.

/16 cont./

122 In favorable years the steamboat service extends as far as Kátschuga on the Lena. Sometimes, however, the latter is so shallow that the steamboats can scarcely reach Kirensk. They belong to the gold washers and are exclusively intended for transporting the supplies needed for the gold washings either down the Lena or in part also from Jakutsk /Yakutsk/ to the residences, as the depots are called here. In the summer all the post traffic takes place on the Lena in boats. Only from Kátschuga to Shigálowa /Zhigalovo/, a station before Ustjilgínskaja, does a post road lead along the bank, and from there downward only a bridle path runs along the bank. The post boats are quite comfortable and protected from the rain by a covering, not to be compared, of course, with the vessels provided with well-furnished cabins in use among the local gold washers and [132] merchants. Only the deep snow represented an obstacle to our present winter journey, a consequence of the exceedingly mild winter, for whereas otherwise at the beginning of January here the freezing of mercury is the order of the day, we for the most part traveled in temperatures of -10° R., and even higher, and only once, at night, did it reach -25° R.; consequently the snowfall was a much heavier one this winter, since otherwise in the greatest part of Siberia it occurs almost solely during the transitional period from autumn to winter. At the station of Bajandájewskaja, between Irkutsk and Kátschuga, we were even told that on December 28 several thunderclaps were heard. /17/ Winter storms, as is well known, are a rather frequent phenomenon in Western Europe, but a very rare one in Siberia.

Another inconvenience was the steep up-and-down traveling to and from the stations, since the bank of the Lena is quite high at most places. The trip itself generally took place on the ice cover of the Lena, only here and there on solid land in order to cut off the exceedingly large bends; sometimes, too, places made dangerous because of surface water /Aufwasser/ were [132] detoured. I shall have an opportunity later to speak about this, as well as the so-called Aufeisbildungen /surface ice formations/ (náledj or nákipēnje), which are a great obstacle to all winter travel in Siberia.

/17 cont./

122 On the morning of January 2 we passed the station-village of O'rlinskaja, well known because of the grinding stones and millstones sent for great distances, which are hewed out of the Silurian sandstone cropping out here. At the station of Turúzkaja (túruka means salt in Tungus), the salty water handed to us reminded us that a region rich in salt springs begins here. About four versts from the next station, Ustkútskaja, which we reached on the morning of January 3, is the great salt works which supplies a large part of the Lena with salt and, formerly a crown enterprise, has been in private hands since 1873. Of the larger villages on our route I shall mention Márkowskaja, as the seat of the Makárowschen /Makarov/ Wólost /volost/ (district), and at the same time, for those of my readers whom fate, or perhaps the thirst for gold (for this is the road to the famous Oljókminsk /Olekminsk/ and Witím /Vitim/ gold-washing districts), will lead along this road after me, I shall insert the remark that the traveler must definitely bring his food with him here, for the stations, despite the frequently large /18/ and rich villages in which they lie, are in no way equipped to board the traveler. On the whole route only at the station of Alexéjewskaja /Alekseyevskaya/, the next one after Kirensk, was an evening meal offered to us, for here the post clerk was a former cook. Otherwise raw meat for our dogs could scarcely be obtained, and even this was poor and enormously costly -- reindeer meat, which is very common here and not at all prized, and a poor piece besides, for 13 kopecks a pound.

On the morning of January 5, we arrived safe and sound at the district capital, Kirensk, almost exactly a thousand versts from Irkutsk, more populous and better constructed, to be sure, than Wercholensk /Verkholensk/, its equal in administrative respects, but in any case not an enviable place to live either. I have already said something about the local grain prices and about the trade on the Lena generally. Kirensk is wholly dependent on the traveling merchants and the annual fair that takes place here in the spring, and anyone who neglects or is not in a position to provide himself with the necessities for a year is in

/18 cont./

122 the worst situation. In the spring, before the arrival of the merchants, even the most ordinary goods that have become necessities, such as tea, sugar, and tobacco, are either completely exhausted in the few shops of the town, or, if a little remains, it is sold for the most fabulous prices. But not only colonial goods are so rare here; a little keg of ordinary cooking butter which I brought with me on my trip in the spring of 1873 excited the attention and the appetites of my guests, all of whom belonged to the so-called better standings, as a rare delicacy not to be had at all in Kirensk at that time. In Kirensk we stopped at the single guesthouse, located on the Lena beside the district school; /19/ it was run by an exiled Pole, but it had only the high prices in common with the European establishments of this kind.

In accordance with all that has been said, Kirensk had little to hold us, and after Czekanowsky had settled some official business, while I, on account of a bad cold, stayed in my room for a day, we continued our journey on the afternoon of January 6 and hastened toward the hospitable Bánschtschikowa, the place of residence of the Dmítrjew /Dmitriyev/ brothers, about 50 versts from Kirensk, which we reached about midnight, found other guests because of the high holidays, and were greeted most cordially by the second brother, Wassílij Nikíforowitsch. These Dmitrjew brothers, because of both their honesty in trading and their amiable behavior, stand out as the best among the peasants with quickly acquired wealth, who, in view of the natural resources of the country and the opportunities offered by the gold washing, and with a little spirit for speculation to get capital quickly, are found quite frequently in Siberia. Their father was still a simple laborer in the forties, until he succeeded, at first, of course, with borrowed money, in taking over some deliveries for the Oljókminsk gold washings and, through that, getting credit and gradually achieving an ever greater expansion of his business. Upon his death, at the end of the sixties, he left his sons a considerable fortune, which in 1875 was estimated at about half a million rubles, but which in any case will grow larger in rapid order, for the brothers have the aim of working their own gold washings, which, with their expert knowledge, will undoubtedly lead to favorable results.

/19 cont./

122 Of the five brothers, who all take part in the business, the oldest, Ssemjón Nikíforowitsch, is, as one /20/ would say in Europe, head of the firm, which, however, is not entirely appropriate here, for the Dmitrjews, although steering toward the first company, cling to their peasant class. They are esteemed everywhere in the vicinity (where, incidentally, they are known under the name of Korýtschnew) on account of the propriety of their trading, which unfortunately cannot be said of all the traders of this region. We were already especially indebted to them from the previous year, not only because of the most hospitable reception which we enjoyed in their house, but because of the active co-operation which they gave in outfitting the expedition. We were indebted to them for a handsome boat, provided with large cabins, in which we four members of the expedition found a comfortable place to work and sleep, and which, likewise at their expense, was brought with great trouble from the Lena and over the mountains of the watershed to the Tunguska, as well as frequent supplies of zwieback, dried meat, butter, and the like, altogether around 800 rubles in value. The Imperial Geographical Society in St. Petersburg has not failed to recognize fittingly this great service to one of the expeditions sponsored by it and sent Ssemjón Nikíforowitsch Dmítrjew the certificate of an honorary member of the Society.

We had met Ssemjón Nikíforowitsch before our departure in Irkutsk, where he had come for business reasons, but also principally to enroll his eldest son in the Gymnasium, so that he would receive there the education that he himself, as he greatly regretted, could not acquire because of the conditions described above. In his absence we were received in Banschtschikowa, as has already been said, by his second brother, Wassílij, who, upon the orders of Ssemjón Nikíforowitsch, not only /21/ delivered at very cheap prices all the supplies needed for the expedition, but even took 100 rubles off the total amount.

/21 cont./

122 On the forenoon of January 10 I left hospitable Banschtschikowa, while Czekanowsky, in order to settle some business, wanted to remain a few more days. I traveled in a half-covered sled harnessed to three horses lengthwise, because the traveled path was very narrow, over the watershed between the Lena and Lower Tunguska, which here, according to our barometric measurements, rises 812 Russian feet above the Lena and 562 above the Tunguska, to the church-village of Podwolótschnaja /Podvoloshnaya/, located on the Tunguska about 35 versts away, which I reached soon after sunset. In the summer one only [136] travels here by riding. When in May of 1873 I rode to the [137] Tunguska for the first time, it was glorious spring, the foliage trees and the larches were decked out in the freshest green, the birds sang, and among them the Siberian nightingale, the blue-throated warbler (Sylvia suecica) also known in Europe, but not to be compared with the European one, to be sure; nothing was reminiscent of the north, except perhaps a most delicate northern orchid, the Callypso borealis, presenting itself to me here for the first time, while I had to take leave here of an old acquaintance, the alpine rose (Rhododendron dahuricum), so common everywhere in more southerly Siberia. It is no longer found along the Tunguska.

I was received very cordially in Podwolotschnaja by the landlord of the lodgings in which I had stayed in the spring of 1873 and where Czekanowsky had lived for one and a half months previously. A delivery of our supplies which had preceded us from Banschtschikowa had announced our imminent arrival, and I therefore found the lodgings heated. Unfortunately it was too much of a good thing, and /22/ I awoke the next morning with a bad headache. It is a customary bad feature of Russian peasants' rooms, which, as long as the stove is heating, are icy cold, but after it is shut off are hot and frequently steamy. Immediately after my arrival a great part of the rest of the male population of the village gathered in my room and was most annoying to me because of the continuous staring at my person, as well as because of the odor emanating from them. These mass visits seem to be the custom

/22 cont./

122 here in these isolated regions, for they are repeated everywhere; the motive is simply the procurement of a drink of liquor; after it is handed over, one is usually soon rid of the company. I could not accomplish the chief purpose of my stay, the determination of the geographical position of Podwolótschnaja, until the night of the twelfth to the thirteenth, for until then the sky was overcast and did not permit any astronomical determinations, as at the time of my stay in the spring.

122 Early in the morning on January 13 I followed Czekanowsky,
123 who in the meantime had traveled on without stopping in order to meet on time in Jerbochotschón /Yerbogachen/, the last Russian settlement on the Tunguska, the Tungus assembled there, whose co-operation had to be secured for our further journey. Crown post does not exist this far, but only country post. Since the people had been informed of our journey, sufficient horses were ready everywhere. The winter route is significantly shorter than the summer route, since it cuts off the larger bends in the course of the river and runs almost precisely in a northerly direction. On the evening of the thirteenth, I reached the village of Ssóssnina, where I succeeded in finishing my astronomical observations by noon of the next day, and on the evening of the same day I came to the church-village of Népa, where on May 31 of the previous /23/ year I had joined the expedition, which had hastened on ahead of me up to here because of the rapidly lowering water level.

133 Népa lies not far from the mouth of the river of the same name, which in any case is the most significant tributary of the Lower Tunguska in its upper half, has a length of 400-500 versts, and originates near the sources of the Middle, or Stony, Tunguska (Podkámennaja /Podkamennaya/ Tungúska). Some 250 versts from the mouth lies a small Russian settlement, Bur, already belonging to the Makárowschen Wólost /Makarov volost/. Népa is the second largest village along the Tunguska and lies on both banks of it.

/23 cont./

361 Between Népa and the most important settlement of this
region, the church-village Preobrashénskoje /Preobrazhenskoye/,
which I entered at noon on the fifteenth, lie the smaller villages of Danílowa, Potjómina, Wérchne- and Nishne-kalíninskaja
/Verkhne and Nizhne Kalininskaya/. Preobrashénskoje is usually called Monastýr (monastery) by the dwellers along the
Tungusku, for in the first half of the previous century it was the
property of the Troítzky Monastery (Troítzky monastýr) at the
place where the Tunguska empties into the Jenissei /Yenisei/,
[175] that is, 2,000 versts from here, and formed a branch of it. The
[439] Tunguska had its golden age at that time and was a rather
active avenue of trade between the Jenissei and the regions of
[793] the Lena. Preobrashénskoje is even now still the seat of the sole
[484] clergyman along the Tunguska, who, with an assistant, has to
[794] cover the entire region stretching 400 versts from north to
south, and to this parish also belong the Tungus, scattered over
far greater distances, who go to the nearest Russian village for
the necessary baptisms, marriages, and the like. The present
clergyman, Flegónt Kasánsky, confirmed for us the favorable
opinion of the Siberian village clergymen that we had already
formed on our earlier travels.

361 /24/ In addition Preobrashénskoje is also the central point
439 of trade on the Tunguska. The merchant in residence here
almost exclusively supplies, directly or through his agents,
which he has even among the Tungus, the entire Tunguska with
all the products of the civilized world needed by the local inhabitants, unfortunately at the most incredible prices, while,
on the other hand, he takes their own products, especially furs,
fish, beef and reindeer meat, mountain cocks, and the like,
432 at the very lowest prices. The Russian peasants and the Tungus
441 are actually in a kind of bondage in relation to the merchant,
in that they, always helplessly in debt themselves, are forced to
accept unconditionally the prices set by him, indeed probably
also to work off the debt and to do everything that he orders.
This oppression weighs even more heavily on the Tungus, for in
addition they are oppressed in similar fashion by the well-to-do
[438] peasants and are actually used like serfs. The fact that it is

T /24 cont./

432 possible for a single trader to usurp such power and to fleece a
441 large area in this manner rests on the incredible laziness of
[438] the local population, which shrinks from the trouble of taking its products to the Lena, where it would find far more favorable conditions both for the sale of these and for the purchase of other
T goods.

438 The authorities have already turned their attention to the conditions described, and the isprawnik /ispravnik/ of Kirensk, who had been in Preobrashénskoje shortly before we were on account of the crop failure that took place here the previous year, the consequences of which, incidentally, were scarcely noticeable because of the grain quickly brought in, had even warned the peasants about the merchant in question in a circular
T order and had urged them /25/ to go directly to the Lena to trade.
[461] Whether this measure will bear any fruit is still uncertain, to
T be sure, for the indolence of the peasants can be overcome only through direct coercive measures. In this connection there is the
466 characteristic example of Potschekúnin, who toward the end of the forties was isprawnik of Kirensk and at that time most feared and hated, but now is in the best odor here. That is, for the encouragement of agriculture he ordered that every peasant annually had to make arable a quarter-dessiatine (1)

T

433 and had the lazy ones beaten unmercifully. The Tunguska owes
T Y it to him that the local peasants now produce enough grain for
241 their own use in favorable years. In Podwolótschnaja practically all field crops are cultivated; in Jerbochotschón, as has been mentioned, the last settlement at present, only barley and oats and various vegetables, such as carrots, turnips, potatoes, radishes, onions, and cabbage, which, however, does not set heads. With careful treatment the latter might perhaps also be achieved; at least the wife of the previously mentioned merchant in Preobrashénskoje, located, to be sure, one and a quarter degrees of latitude farther south, not only raised beautiful

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1. One dessiatine = 2400 sq. sagenes. One sagene = 7 Russian feet = 3 arshins.

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Y /25 cont./

241 heads of cabbage, but even cucumbers, melons, and watermelons, in hotbeds, of course -- and no wonder, when even the far colder Jakutsk /Yakutsk/ could contribute to the agricultural exhibition in Irkutsk in the year 1868 a watermelon
T weighing 30 pounds.

631 Finally in administrative respects, too, Preobrashénskoje is the principal community of the Tunguska, in that here a division of the Petropáwlowskschen Wólost /Petropavlovsk volost/ and, five versts away, the administrative board of the Kureíki and /26/ Kondógir Tungus are found, the latter of
T which was transferred here from Kirensk only a few years ago.

122 After a short stay in Preobrashénskoje I traveled to the village of Móga, located barely ten versts downstream, where Czekanówsky had discovered a suitable dwelling for us, in which I, busy with meteorological and astronomical observations and the calculation of those made earlier, remained until January 23. In the meantime Czekanówsky came back from Jerbochotschón, where he had found a number of Tungus and had arranged with them the furnishing of the reindeer and narten
T /Russ. narta, "sled"/ required for our further travels to the
[115] sources of the Olenek. We had already greeted our old acquaintance, the schúlinga (Tungus elder) Petrowán Golé Káplin, who had been very helpful to us the year before because of his knowledge of places and his great influence on his countrymen. This year he was prepared, after he was relieved, at his request,
T of the office of schúlinga, to accompany us on the whole trip.

493 The Tungus at first did not want to know anything about
492 narten, for among them (at least in this region) they are hardly used at all; they always make their trips riding on reindeer,
482 for which only the strongest animals are suitable, while the
T others are able to carry a load of no more than about two poods
122 on the average. With our baggage weighing about 180 poods, such a means of transportation would be bound up with the greatest difficulties, for we would be required to pack all the baggage in poods and load and unload every day. In addition, for one not accustomed to it, riding on reindeer is very difficult on account of the smooth, loose skin of these animals (one always rides without stirrups) and in particular would not

/26 cont./

122 agree very well with my chronometers. Principally through
[123] the /27/ influence of Golé, Czekanowsky finally succeeded in making the Tungus willing to prepare ~~the~~ narten as well as to provide the necessary number of reindeer..

On the afternoon of January 23 I left for Jerbochotschón /Yerbogachen/, while Czekanowsky did not intend to follow until the next day, for when we had traveled together we had scarcely anywhere found a large enough number of horses ready. On this route one passes the villages of Shdánowa (about ten versts below it is found a rather significant rapids, which, however, we had passed without any danger the previous June, with the water level high enough), and Jerjóma, Óssjkina, and Ankúla.

At sundown on the twenty-fourth I arrived in Jerbochotschón, which was to be our headquarters for several weeks and where I accordingly immediately set up the meteorological instruments, with whose readings, as well as many astronomical observations to test my determinations of the previous year as well as to check the movement of my chronometer, I was busy until our departure. For magnetic purposes Jerbochotschón, as my observations of the previous year had taught me, was quite unsuitable, for it lies on a basalt rock which very strongly influences the magnetic needle. Also unfortunately I could not carry out my intention to undertake precise observations of the northern lights, which are said to be very frequent here otherwise, for in this respect too this year was an anormal one, and only once, on January 29, was a faint light to be seen, without pro-
132 nounced arches or rays. The temperature of this winter here too, as on the Lena, was relatively a very high one -- to be sure, only relatively, for Jerbochotschón lies on permafrost, which, according to the statements of the inhabitants, thaws in summer only to about a man's height, while corpses, for example, lie in eternally frozen ground. /28/ Only once during our stay in Jerbochotschón, on the morning of February 8, did the mercury freeze, while the alcohol thermometer gave a minimum of -34.5° R. During the night and the first hours of the morning it frequently reached -25° to -29° R., but during the day the sun exerted a strong influence so that the temperature in

/28 cont./

132 the shade at midday amounted to -19° R. at the coldest, but usually much less, and the maximum at noon on February 12 was only -5° R. In addition it was usually calm or there was a very slight south wind; stronger winds also came only from south to west and only once from the northwest, and none at all from the eastern half of the wind rose; the sky was usually more or less overcast with cirri and was quite clear only in connection with heavier freezing, especially at night; snowfall was very frequent, which, as I remarked above, is not common at this time of year throughout Siberia. Out of 30 observations in Móga and Jerbochotschón I noted snowfall on 13 days, usually in very fine needles, only rarely in large flakes such as we usually see in Europe.

136 I frequently took advantage of the pleasant weather for walking in the beautiful pine forest surrounding Jerbochotschón, which I had already often roamed through in the summer when we stayed here over a week. If it was not overly lively even in the summer, the scarcity of birds was very striking now in the winter, as it had been during the whole trip. Only in the vicinity of the villages did one see bullfinches and occasionally sparrows, farther in the forest a couple of woodpeckers in the most favorable case, and, as a great rarity, a raven. If one went on showshoes in more unfrequented parts of the forest (I went almost solely on a trodden-down reindeer-trail), one would probably find mountain cock and hazel hens, besides squirrels (generally as /29/ flying squirrels), but, at least this year, they were not common.

114 [282] [251] In the meantime Czekanowsky was incessantly busy with preparations for our trip. Our dwelling was always filled with inhabitants of the village and Tungus; in particular the cutting of the leather and cloth required for the hitching of the *narten* took much time. I would not undertake to describe the odor which filled our quarters, especially when butter was melted in order to pour it into the vessels intended for its transport. I can almost say with Heine, "*ich habe gerochen alle Gerüche in dieser holden Erdenküche* /I have smelled all the smells in this

Tungus RU5

/29 cont./

114 lovely earth-kitchen/." but there was something I had not yet smelled and Heine had probably not either.

Now and then we also had guests, the above-mentioned clergyman from Preobrashénskoje, as well as the clerk of the administration there, Mr. Rogaléwitsch, an exiled, most highly educated Pole. Our kitchen was quite passable; our Cossack of this year, Iwan, exerted himself in the noble art of cookery; acting as teacher was one of our men from last year (a native of the Tunguska), to whom this occupation had fallen at that time and who, during our stay in the capital, Irkutsk, had inquired in detail in the guesthouse from where we got our food about the preparation of everything that especially pleased him. The water required for our household had to be obtained from snow, both in Jerbochotschön and farther up. The river water from Gáschinskaja on, a little village above Népa, where the principal salt springs of this region lie (such are also found along the Nepa 70 versts above the mouth, as well as along the Tunguska near Daníłowa, near Potjómina, and probably more than once under the surface of the water itself), is more or /30/ less salty, which even in the spring, despite the high water level, is very noticeable in places, but stands out even more unpleasantly in the winter.

36/ [136] [175] Before I proceed to the description of our further journey, I want to note that Jerbochotschön was only founded around the eighties and, to be sure, because of the enormous numbers of sables which were found here at that time, but which have now completely disappeared and are still found along the Tunguska only in the middle course, in the region of the Ilimpéja [438] [441] /Ilimpeya/ and in the mountains of the right bank. Despite the present falling off of profits in sables and the high cost of living mentioned previously, the inhabitants here are well off on the whole, which is not surprising, for they act as middlemen between the above-mentioned wholesale merchants and the Tungus immediately neighboring them, and a part of the profits, despite the high prices which they themselves must pay, remains with them of course. Jerbochotschön is also

/30 cont./

361 favored over the other villages of the Tunguska by the fact
that, because of its high position (about 55 feet above the ice
cover of the river), it is protected from the high waters of the
[135] Tunguska inundating all the other villages in the spring. The
name Jerbochotschón is probably to be attributed to the very
striking traprock a few steps from the village, which
Messerschmidt, who traveled through this region at the time of
Peter the Great, mentions under the name Korbukatschán, and
he gives the latitude, closely corresponding to that found by me,
as 61° 16'.

114 Finally, after our narten, very light sleds of the most
[231] primitive form -- the ones intended for Czekanowsky, me, and
[517] the Cossack also provided with a very light half-covering -- and
the harness were completed and the reindeer fetched, for the
[527] most part from great distances, /31/ our Tungus proceeded to
break in the latter, which provides a principal form of amusement for the local population, a kind of corso driving such as is customary in other places during carnival week, which we were just celebrating here. On February 15 all these preparations were going so well that the narten could be loaded, and we brought to an end our correspondence, which had occupied us during the last days.

114 Put candidly, we were heartily tired of Jerbochotschón. Apart from the above-mentioned smells, our dwelling was otherwise quite grand. On the walls of the best room -- we had three, with an anteroom -- in addition to an assortment of holy images in one of the corners, there was also a show of many secular pictures, first the portrait of His Majesty the Emperor, with gilded epaulets and medals, but at a strikingly youthful age and in a quite impossibly dazzling orange-yellow uniform, the Empress, the successor to the throne, and other members of the imperial family to be recognized only by the inscriptions, then Prince Gortschaków /Gorchakov/ leading his brave soldiers against the allies before Sevastopol, and furthermore various genre pictures, illustrated romances, the troĭka udalája (well-known folk song), etc. If the eyes and imagination were therefore sufficiently taken care of, this was not the

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/31 cont./

114 case for physical health. The floor, on account of the cellar under it, was drafty and cold, the air in the room warm only if the stove were closed, which, however, since the food, tea water, and the like were prepared on it for us and our men, could be done only toward evening. Consequently the most varied afflictions from colds continually incommoded us, and we could hardly wait for the day of departure.

/32/ Second Chapter

100 Departure from Jerbochotschōn on reindeer sleds. -- Siberian traveling costume. -- Snowshoes. -- Our tschum, to be preferred to a Russian peasant's dwelling. -- Provisioning the expedition. -- Drawbacks of journeys with reindeer. -- Arrangement of the travel procession. -- Condition of the snow. -- Travel through the forest. -- Boredom. -- Life of the Tungus. -- The reindeer and its utilization. -- Clothing of the Tungus. -- Their relations with the Russians. -- Disappearance of the game animals. -- Religion of the Tungus. -- Shamanism.

122 On February 16 at 3:00 in the afternoon we left what had been our headquarters up to now, accompanied by the entire male population of Jerbochotschōn /Yerbogachen/, who gave energetic help on the steep descent to the river. Our procession consisted of no less than 35 narten /Russ. narta, "sled"/, each one hitched to two reindeer, 30 of which were loaded exclusively with baggage, while the remaining five were claimed by Czekanowsky, myself, the Cossack, the previously mentioned Tungus, Golé, and our [115] interpreter, Nikolai Balākschin. The last is a wealthy farmer who had formerly engaged in private trading and to whom, among other things, Jerbochotschōn is indebted for its church, a very small one, ([123]) to be sure. The year before his son had given us a fossil ox-skull (Bos primigenius), which unfortunately, because of its great weight, but otherwise well packed, had to be temporarily left behind in Jenisseisk /Yeniseisk/ to be forwarded to /33/ St. Petersburg when an opportunity presented itself. Besides the loaded narten we had ten loaded reindeer and about as many without loads, the latter of which were intended for preceding the procession and trampling down the

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/33 cont./

122 snow as much as possible. Then joined to this there was also a crown of women and children, the families of the Tungus accompanying us, with at least 50 reindeer.

Before the reader accompanies us farther along our route, I first want to describe for him in detail the apparel in which I advanced toward the north. Czekanowsky was equipped almost exactly the same, since we had bought or ordered most of the articles in our wardrobe together. Over the underclothing, for which I had chosen mostly colored material because frequent changes of linen were out of the question in view of the great difficulty of laundering it, I wore, first, pants and a camisole knitted of red wool, and over that a very warm hunting suit of the thick double material such as is ordinarily used in Europe for dressing gowns. To satisfy the sense of beauty of the Tungus, which we had learned to appreciate the year before, this suit was indeed very tastefully trimmed with a green lining, facings, a standing collar, and bindings, as well as gold uniform-buttons. Besides short cotton socks, my feet were covered with long woolen stockings; over these, I drew on short stockings of dog hide, the fur inside, which were tied at the ankles, and finally, over this, long boots extending well above the knees, made of reindeer skin (Russian untý, Tungus oschamál gurumí), the fur outside, and fastened with reindeer thongs in three places, over [552] the ankles, at the knee joint, and above it. I wish to note also that the soles of these boots /34/ should have hide sewed on them, at best from that found between the hoofs of the reindeer (in Tungus such hide is called haéma), the fur on the outside. On mine this was unfortunately not the case, and as a result my feet were cold whenever I had to stand in the snow for some time, even when it was not very cold. I helped myself out with straw, which was stuffed into the boots, lacking Lonicera bark (Tungus aîkta), which is used by the natives for this purpose. My upper body was covered with a short sheepskin extending barely to the knees, the leather to the outside, which was held together around the waist with a leather belt; on my head, a cap of young reindeer skins (pýshiki), lined with sheepskin and provided with ear

Tungus R45

/34 cont./

122 muffs, skin visor, and a flap to protect the back of the head; around my neck, a boa of squirrel tails, which could be wrapped at least four times around the neck and then, of course, also completely covered my face. While making observations, I protected my hands with ordinary wool gloves over which leather was sewed. For traveling, besides mittens lined with sheepskin, I had a very fine muff of fox skin, the fur on the inside, a present from the clergyman Kasansky.

This costume almost always satisfied me, both during observations and for traveling in the covered sled or narte, in connection with which, however, it is to be noted that in the latter case I sat tightly wrapped in the constituent parts of my bed, under me a thick felt, folded double, on that a reindeer skin, behind my back a pillow, then a covering of arctic fox tails, which was sewed together at one end as a bag for my feet, and over this a bearskin. If I was nevertheless too cold, I wrapped over the fur my thick plaid, which is an indispensable garment on such trips and served me also as a bed covering if my fur covering was too warm, say, during stays in villages. /35/ Finally, I still had in reserve for the most intense cold a very heavy reindeer fur acquired in Turuchansk /Turukhansk/, with the fur outside, a so-called párka, which was very wide, so that I could put it on over my sheepskin, and provided with a hood. Originally it was so arranged that one could only draw it on over the head, like a shirt, but since this was most inconvenient because of its weight, I had it cut open in front in Jerbochotschón. With the exception of this last garment, in which I could scarcely move, to be sure, but which was as warm as an oven, the other clothing was relatively light and comfortable, so that I could walk several versts in it without effort.

[481] Also to be counted as part of the winter costume are the
[291] snowshoes (Russian lýshi, Tungus huksílla), which, made of
[281] thin, flexible larch wood and covered on the bottom with rein-
deer skin, are lightly fastened to the foot with a loop of rein-
[284] deer thongs. I shall give the dimensions in terms of mine, 30
[481] centimeters wide, 145 centimeters long. There belongs with
them for support, especially on sloping terrain, a stick (Tungus

/35 cont./

122 [481] ssobgúra) provided on one side with a small hook, on the other a hoop stretched with thongs, which prevents sinking into the snow.

342 122 I have purposely described our clothing in such detail; on it depends the weal or woe of the traveler and, correspondingly, also the more or the less scientific material gathered by him. A second, almost even more important factor in this respect is the housing.

Only a few hours after our departure from Jerbochotschón, we had our first opportunity to try out our tent, which was now to serve us, at least for several months, as a dwelling. At a place as level as possible, /36/ about four feet square, the snow was shoveled out and packed solidly at the sides. A cone of poles was then erected over this pit by first tying together two or three poles at their tips and leaning the remaining ones against these, [281] 20 to 30 in all. This framework was covered on the lower half [287] with reindeer leather (rówduga), the tip with a covering of woolen cloth, and the space in between with carefully prepared birch bark in long strips, about two feet wide, sewed together (Tungus týkscha). Inserted between the latter was a board with an opening, through which was led the chimney of the iron stove to be found in the middle of the tent. Finally, the snow was shoveled up around the tent and packed down, and the threshold was constructed out of several sticks laid on top of one another and snow packed on from the outside, while the door consisted of a piece of reindeer leather flapping back. In a strong wind the covering is also secured on the outside by a few poles, and any defects showing are covered with birch bark lying at hand. The snow wall between the poles and the interior was lined with felt, so that we could put all the hand luggage along it, the floor was strewn with fir or pine branches, and then the bed, already described above, was spread out.

The pitching of the whole tent takes about an hour; it differs essentially from the dwellings of the wealthier Tungus (which they call dschū, the Russians tschum /choom/) only because of the iron stove and the cap for covering the tip made possible by it, whereas among the Tungus the fire taking its

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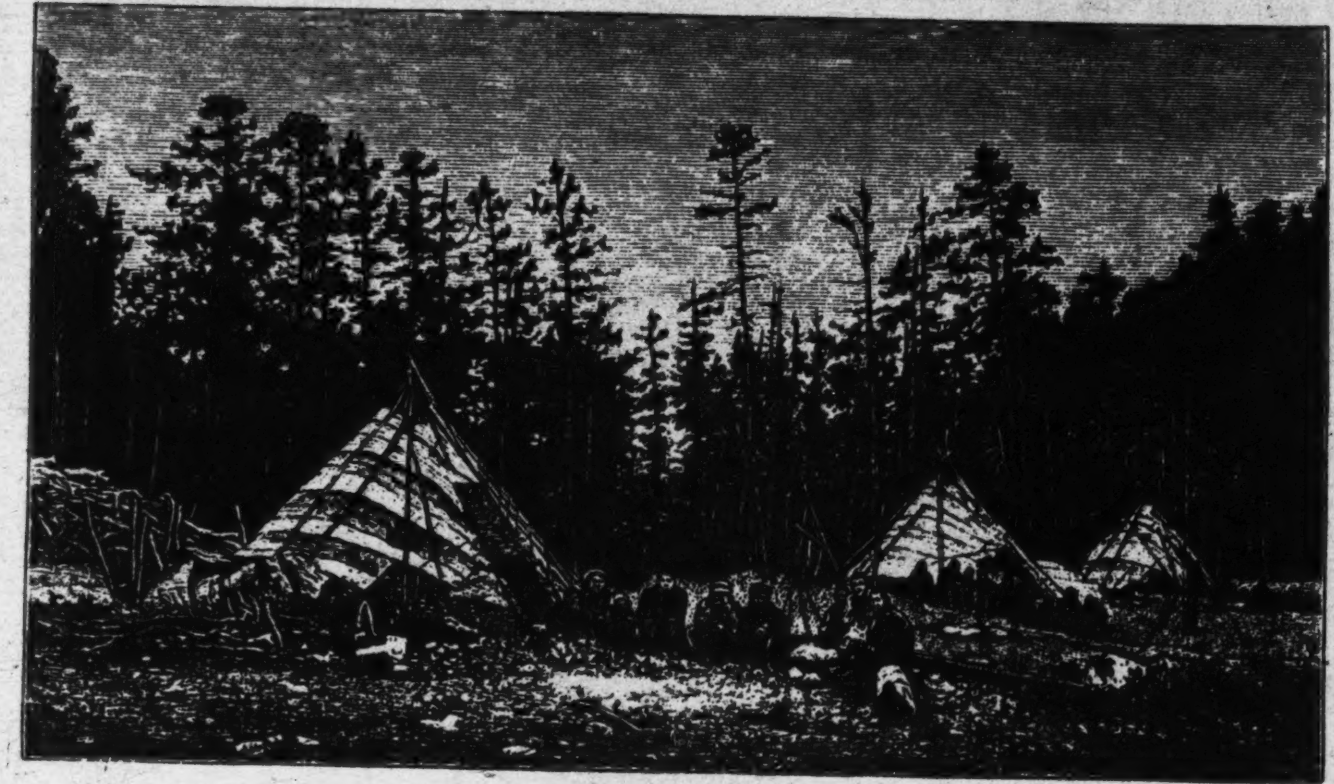
/36 cont./

122 place prohibits the closing of the upper part. Perhaps this im-
342 provement of the tschum devised by Czekanowsky (for even
123] Baron Maydell and Dr. Neumann /illustration appears here/ /37/ used only ordinary tschums on the expedition conducted by them into the land of the Tschuktschen /Chukchee/) will be adopted by the Tungus themselves, for they greatly admired our arrangement and frequently inquired about the price of the iron stove, which is certainly within the means of the wealthier
[184] ones. The tschums of the poorer Tungus differ from those of the rich only in that linen is used instead of the precious reindeer leather, and snow is piled somewhat higher all around
122 for protection. Our tschum was a most comfortable dwelling, which we both preferred by far to our last quarters in Jerbochotschón; the best proof of its excellence was that in a few days we were free of the afflictions of colds acquired in Jerbochotschón and also were further spared them. In the tschum, by adding the wood desired, we could achieve any temperature that suited us in a few minutes, and even at night, when we lay so warmly covered, we could immediately remedy any perceptible coldness. Inside the tschum we were aware of a coldness of -36° R. only by the reading of the minimum thermometer set up outside for the night and by the frozen mercury. Moreover it offered sufficient space for beds for four or five persons; during the day over a dozen often sat around the stove.

I should like to add a few words here about our kitchen, which is certainly the third essential condition for the welfare of the traveler. On the occasion of our stay in Jerbochotschón I noted that it was stocked quite passably. Apart from the fact that the requirements in flour, groats, pease meal, ham, bacon, zwieback, tea, sugar, butter, etc. are estimated for the longest anticipated duration of the expedition -- last year provisions for a /38/ whole month were left over and could not be profitably sold in view of the low prices on the Jenissei /Yenisei/ -- we shall certainly, at least to the Olenek, have no lack of fresh reindeer meat, which is a very savory dish in any form.
[123] There will also probably be no lack of fish; we ourselves
[136]



Tungus camp.

Tungus Rus

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/38 cont./
122 carry along two nets for catching them, and along the Tunguska
[123] one can get enough fish from the Tungus, especially pike up to
[136] almost half a pood in weight, crucian, eelpout, and a very tasty
fish called *jasj* by the Russians (probably *Idus melanotus*), which,
incidentally, I believe is also found in Europe, but I do not
know its German name. Occasionally one also obtains a mountain cock or a few hazel hens, and later in the year we shall
probably not lack swans and geese. Twenty-five of the latter
were killed in one day during the molting season in the summer
[137] of 1873. In the high latitudes toward which our route now leads
us we shall probably have to do without two very pleasant supplements to our foods, leeks and rhubarb (whose leaf stalk is also well known in Europe as a very tasty and wholesome vegetable), the former of which we found in great abundance last summer, the latter only along the lower course of the Tunguska in mountainous regions. The only thing of which we shall in any case be too short is liquor, which, of course, can only be carried as alcohol. In the extreme dryness all our little kegs leak more or less, no remedy has any lasting effect, and yet the demand is great among the Russians as well as among the Tungus whom we meet.

Besides the necessary food supplies we have also provided ourselves with a few luxury articles; in particular I might mention defatted cacao from Siou, which is to be highly recommended for traveling as a most pleasant and nourishing beverage, and moreover much /39/ easier to prepare than coffee; a glass of punch will also not be lacking on very special festive occasions, which, by the way, are not often determined by the calendar. On the other hand, our smoking supplies, especially the cigars, are not at all luxurious, even though the quantity might suffice. I hope the reader who smokes will not be horrified to learn that here we permit ourselves only No. 3 Krafft cigars, which cost a ruble a hundred in St. Petersburg and for which, like similar types, the collective name "*Postillonscigarren*" /postilion cigars/ exists in Dorpat.

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/39 cont./

122 In the summer of 1871, soon after my arrival from Europe, when I made an excursion with Czekanowsky to Lake Kossogól, my supply consisted of No. 10 Krafft cigars, which in St. Petersburg cost four rubles a hundred, and I laughed at Czekanowsky, who already at that time carried the Krafft No. 3, to which he had given the name Baikaleros, and predicted that I would probably soon prefer his kind to mine, called Munko Ssardykos after the ascent of the high Múnko Ssárdyk. He proved to be right -- it came about on the very same trip -- and I was later convinced often enough that with the many vicissitudes that go with a trip in the wilderness even the best cigars are spoiled and then are almost even worse than the most inferior kinds, which cannot get any worse anyway. A real Havana tastes all the better after the return. Last year in Jenisseisk /Yeniseisk/ such were offered us in abundance, along with many other good things, above all, and what was most welcome to us, the latest publications of the Geographical Society. What will fate have in store for us this year in Jakutsk /Yakutsk/?

[133] Since the reader has become somewhat familiar with our arrangements, he may now accompany us further /40/ on our trip to the north, and, to be sure, directly north, with very slight deviations, for here the especially large bends in the river are for the most part cut off by straight passages over the tongues of land (Russian mjăg, Tungus kotschō), generally mountainous, separating them.

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122 On the first day we covered only a short distance, although we did not stop until long after sunset in order to reach a place with good reindeer fodder, but we consoled ourselves that it was the first day and consequently the reindeer were still not sufficiently broken in. Unfortunately on the very next morning we became convinced that journeys with reindeer, at least with a caravan as large as ours, were among the slowest and most tedious that we had ever made. The greatest difficulty lies in catching the reindeer in the morning, which is a special task of the women. Although the best possible feeding grounds were chosen as stopping places, which the Tungus know in detail, it nevertheless often happened

/40 cont./

231 that the reindeer -- and we had a minimum of 130 of them, but
122 occasionally even as many as 180 -- *in pleno* or only individually led off by an enterprising lead-buck, sought more succulent food farther away and could be found and caught only with great difficulty. The latter is done by throwing a doubled rope of horsehair (Jakut /Yakut/ work, in Tungus *má-ut*) over the antlers of the animals. The catching and harnessing of the reindeer took no less than four hours, even in the most favorable cases when all were found at once, and therefore we could never break camp before 9:00 in the morning; we often had to leave a few people behind to look for missing reindeer and bring them to us, but when too many were missing we had to wait ourselves, and it even happened /41/ that we did not break camp until three in the afternoon. Indeed, if we had only known this beforehand, we would have been able to sit and work comfortably in our *tschum*. But since taking it apart and packing it also took some time, it was usually dismantled as soon as the majority of the reindeer arrived. If it later turned out that reindeer were missing, we had to wait for hours in the cold if we did not prefer to crawl into our *narten*, where, to be sure, it was warm, but no activity was possible, outside of, say, smoking cigars. In the evening, on the other hand, it was necessary to stop early so that the *tschum* could be set up in daylight. Often, too, the reindeer had to be led to a pasture that suited them so that they would not scatter in disorder, which likewise could not be done very well in the dark.

122 As a result of this mode of travel our way of life had to be completely altered. It made a very funny impression when at about 7:00 on the first morning of our journey the Cossack announced that the noon meal (*objéd* /obed/) was ready. During the first days we did not greatly relish it early in the morning, and while traveling our appetites would appear at our customary noon hour. This did not last long, however, and soon it tasted fine to us even early in the morning; indeed, on rest days when we could have eaten as usual, our stomachs demanded more solid food early in the day.

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/41 cont./

122 When all the preparations were finally finished in the
[484] morning, the long procession very slowly set out. At the head,
[492] a guide on snowshoes who carefully examined the snow with his stick and in particular, as soon as traces of surface water were noticed, quickly changed the direction; then unladen reindeer tied together in pairs /42/ to trample down the path somewhat; after that the laden ones, each procession led by a woman riding on the first reindeer; finally the narten, Tungus on showshoes alongside them to be of assistance during the frequently occurring
[492] disorders. The journey proceeded step by step; indeed, from time to time, at places where the snow was less deep and
[484] yielding, the procession set off at a light trot, but this usually did not last long, and the sudden halt of the column showed that again something was not right, until, after a longer or shorter pause, the Moht! Mott! Mott! of the Tungus set the reindeer in motion again. The greatest delay was caused by the women with their pack animals, on which something continually had to be changed and which also tired sooner than those in harness. We were glad to be able to make the trip in narten; we would have proceeded even much more slowly on riding animals. Even so, we pushed ahead only about three versts an hour, if unusual obstacles did not interrupt the journey even more, and four versts were probably the maximum that we were able to reach with better roads, and then for only a short time. The journey proceeded this way on the level covering of the river, in other words, under the most favorable conditions, since only the somewhat deeper snow in a few places and the more unfavorable quality of it could decrease the speed somewhat.

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132 In general the snow of the Tunguska, apart from those places where strips of hard snow (sastrūgi, blown together by the wind) crossed the road, was no less than a foot deep and at the deepest places reached no more than two feet in depth. Moreover it mostly consisted of very fine grains, so that it was difficult to pack down when shoveled in a mass /43/ and fell apart like sand. Since about the beginning of March we had noticed that its surface was becoming harder and broke away from the underlayer in sheet-shaped crusts when crossed by our procession; these were

Tungus RU5

/43 cont./

122 sometimes larger, sometimes smaller, and of varying thickness
132 and hardness, and indeed sometimes they were suddenly missing entirely after we had been noticing them for some time. The lowest layer of snow, as we first had occasion to observe on the shore while setting up our tschum, but then again several times on the river, was crystalline. The crystals, up to six linien long, consisted of clear ice and exhibited a generally grooved surface and very sharp edges.

R2 Many greater difficulties obstructed our journey when we had to cross one of the many tongues of land in order to cut off a bend in the river. These were usually covered with forests, through which a path first had to be hewed. For this purpose several workmen always went ahead with axes, but there remained plenty of tree trunks, roots, and the like, which made progress very difficult and constantly interrupted the journey. The least trouble was when a narte remained caught on some obstacle, while the reindeer, in pulling forward, tore the harness strap and ran away. They were usually soon caught and the strap knotted together. Sometimes on such occasions the bow of the narte to which the harness straps were fastened broke at the same time. Such damage could also be quickly repaired, for we usually carried with us a few reserve bows. On the other hand, if one of the runners snapped, the procession had to halt for a longer time so that the damage could be repaired, and, to be sure, now and then the damaged narte were left behind and fetched later. The /44/ difficulties which crossing the forest presented in itself doubled, of course, when there were mountains to be crossed. The ascent strained the reindeer exceedingly, but the descent was still much more difficult. At every slope that was even moderately steep the narten had to be let down individually so that they would not crash against trees or into each other. Under such circumstances progress was very slow and we could barely cover more than two versts an hour on the average. Nevertheless the reindeer could not keep up even so slow a pace for any length of time, and on about the fourth day, or on the fifth day at the latest, a day for rest had to be granted on their account. Accordingly it

Tungus RU5

/44 cont./

122 is no wonder that we were on the road over 14 days from Jerbochotschón to our next main station, Ajakán, the camp (stoíbischtsche) of the wealthy Tungus Uwotschán, while the distance in a straight line to the north (figured from the difference in latitude), 151 versts, does not amount to too much more with all the bends of the winter route.

There was almost nothing at all of interest along the way, for we had explored the whole region the summer before when everything was green and in bloom and every step brought an addition to our collection. Now everything was so thickly covered with snow that one had difficulty covering long distances, even on snowshoes, and besides the forest offered absolutely nothing attractive, because here too, as before, it was astonishingly lifeless. During the trip on the river, comfortably stretched out in our narten and warmly covered, sleep was best, which we could do, but even that seldom happened because we had no lack of it at night in our comfortable tschum. There was also not much work to do after the halt, because /45/ meteorological observations were practically the only ones that could be made.

On the travels by land, of course, we could not abandon ourselves to this apathetic repose and often enough had to dart into the deepest snow in order to prevent the narte from overturning or crashing, or, if the former quite unexpectedly happened, became covered from top to bottom with snow. Nevertheless, if we fortunately succeeded in overcoming all these obstacles, we owed this solely to the truly admirable endurance of the Tungus who accompanied us, and this will be the place to make the reader somewhat better acquainted with them.

221 171 The Tungus are generally known as nomadic people, but I should hardly apply this designation to at least the tribes of this people, spread over almost all of East Siberia, with whom we had the opportunity to become better acquainted, namely, the Kureíki and the Kondógir, to whom were added in the summer of 1873 the Turuchansker /those of Turukhansk/, any more than to the Russian peasants who annually make often enormously long trips with wagons or at certain times go as workers to the far-off residences. The former, like the latter, have a home and can therefore not be regarded as true nomads.

Tungus RUS

/45 cont./

800 221 and can therefore not be regarded as true nomads. Even though
[651] the Tungus may cover ever such great stretches when hunting --
they are not too great, outside of exceptional cases, a few hun-
[439] dred versts at most -- or at certain times of the year he may seek
[648] out the often far distant Russian settlements in order to pay his
jassak /yassak/ (crown tax) and to buy the most necessary goods,
[423] he always returns to one and the same place, which, according
to Tungus law, belongs to him in such a way that only he sets
traps and catches fish there, in short, where he enjoys almost
[621] all the privileges of a /46/ European landowner. He usually
leaves at least a part of his family there, which, incidentally,
[687] also frequently accompanies him; the arm of the law can reach
him there if he has not paid his jassak, which would scarcely
be possible in the case of an irregular wandering about in the
361 wildernesses of the north. Admittedly, large settlements do not
exist among the Tungus, for their way of life prohibits them.
311 Each family needs a region that is not too small in order to be
233 able to live on the yield from hunting and fishing and, what is
[471] equally important, for their reindeer, which constitute their
chief or rather sole wealth, to find ample nourishment at any
time.

231 Without the reindeer (orón) the Tungus could not possibly
exist. Not only is it his sole domestic animal, besides the
dog, which here is only used for hunting, it also completely
replaces all others for him, since he knows how to use it literally
to the last sinew, and moreover it is satisfied with the humblest
food, which it knows how to procure for itself, even in the
coldest winter and the deepest snow, by pawing for it. Reindeer
moss or, lacking that, fresh or dried grass and tree leaves, and
492 especially shave grass (Equisetum), are its frugal diet. The
[171] Tungus on the Tunguska, as I have already said, use the rein-
deer only as a riding and pack animal, while other tribes, as
[415] we did on this journey, also use it as a draft animal. The
very primitive saddle without stirrups consists of a wooden
frame and over that a reindeer skin or pillow, in front and
back a pommel of carved wood or even reindeer antlers; on

Tungus RU5

/46 cont./

492 each side there usually hangs a potakúi, a sort of saddle bag of
[415] elliptical shape with a curved-out edge at the top, made, to-
[287] gether with the cover pushed into it, out of birch bark and /47/
[281] covered with reindeer skin, often also decorated with beads.
They are estimated to hold a pood of flour, and thus two are the
[531] normal load of a reindeer. The strongest bucks are used as
[855] riding animals, as was said, and it is very funny to see a fat
Tungus woman balancing on her reindeer, generally with snowshoes on her feet, which usually brush the surface in the deep snow, or a child fastened to the saddle, with sleeves sewed up at the hands, which only makes its displeasure with this mode of travel known from time to time by a frightful howling; upon stopping, it is simply tossed into the snow to quiet it until the tschum is set up, where it usually is soon in a better humor and crawls about happily.

231 The average price of a reindeer came to about 12 rubles
[435] at the time of our stay. In former times it had been higher, but
decreased demand in the gold washings had lowered the price.
Bucks are usually more highly valued, and a strong riding animal
122 probably brings 30 rubles. The meat of the reindeer is tasty in
262 any form, which, by the way, is also well known in St. Peters-
[439] burg, where I have eaten it often enough. Smoked reindeer
[251] tongues are even exported abroad. In the summer of 1873 we
obtained from a Tungus reindeer meat cut into small cubes and then dried (ssulîkta), which was really excellent; it withstood the highest degrees of heat and tasted quite tolerable even without any preparation, but best simmered with some condiments
262 in a covered vessel, then chopped and prepared as a cutlet. In general the Tungus do not eat much reindeer meat, at least not the poorer ones, because the tame reindeer comprise their whole fortune; only when hunting supplies them with a /48/ wild reindeer is it consumed. The marrow of the leg bone, eaten raw, is regarded as a great delicacy and in fact is so tasty, especially half frozen, that it might please even the most pampered European palates. The liver, too, is a delicacy, as among all the animals of the deer family. Reindeer milk is much thicker than

/48 cont./

262 cow's milk and has a very good flavor. Butter, to be sure,
cannot be made out of it, as our attempts proved, which yielded
a wax-hard substance, but, on the other hand, it might be
suitable for making cheese, or even better to be used in a con-
[231] densed state; however, the Tungus, of course, have no conception
[234] of this, and the wealthy ones, such as the above-mentioned
Uwotschán, for example, who owns more than 1,000 reindeer,
leave the majority of the females unmilked, because they only
know how to utilize the milk for immediate use.

281 Reindeer skin makes up the chief constituent of the cloth-
[291] ing as well as, as has already been said, the dwelling and beds of
the Tungus. The most highly prized ones are the autumn pelts
[342] (odínnera), on which the hair is shorter and less brittle, which
[352] also shed less and are not pierced by the larvae of the reindeer
fly (Oestrus tarandi). That is, this insect lays its eggs in the skin
of the animal; they develop there into almost inch-long larvae
and fall out in the spring, along with whole bunches of hair.
294 When the fur coat of the Tungus has become decrepit with age,
177 he has the advantage of being able to convert it into a summer
291 coat by shaving it. The wealthier Tungus are exceedingly fond
of European materials for their clothing; the women in particu-
lar prefer black velveteen, which is trimmed with a bright,
291 frequently red-colored material. While the poor Tungus is
554 clothed only in /49/ reindeer skin from head to foot, the wealthier
[531] one wears at least a shirt of European material, but often his
outer clothing too is European, or, if it is made of reindeer
leather according to national custom, he has it decorated with
pretty bead embroidery, which is commonly seen. Stocking
bands, trimming on the caftans, tobacco pouches, tinder boxes,
125 etc. are sometimes very tastefully embroidered.

281 The hide of different parts of the reindeer has special
[291] designations and also its quite specific use, for instance, for
foot coverings only the skin from the legs (Russian kámyssy,
Tungus óhscha) is used, for the soles only the fur growing be-
[352] tween the hoofs (Tungus haéma); also the skin from the head
has its use as small rugs (kumelán); on the other hand, in this

/49 cont./
825 region reindeer skins do not seem to be differentiated very much
281 according to age, probably because the Tungus here usually
use their hides themselves. We never heard here the expressions
used among traders: pýshiki for hides from young reindeer,
wýporki for those from unborn ones. There also seems to be less
stress here on the color, although wealthy people probably also
136 prefer the dark ones. In general the color of the reindeer varies
from the purest white through all nuances of gray and brown, and
only the mane under the neck is always white. The young animals
usually have lighter spots, resembling those of the fallow deer,
along either side of the spine, which gradually disappear in later
years. Bucks as well as females bear very irregularly formed
antlers increasing in magnitude with age, which sometimes remind
one of the palmed antlers of the elk and sometimes of the
digitate ones of the red deer, indeed are often shaped quite differently
[825] in the two halves. Castrated ones are said to lose the
antlers. In the spring they are replaced, and during this /50/
period the animals often present a horrible appearance, because
slight bleeding occurs at the newly developing horns.

565 I have frequently spoken of richer and poorer Tungus. The
[648] latter are usually in the service of the former and are probably
just as mistreated by them as the latter are by the neighboring
Russians, and in particular by the previously mentioned merchant
608 in Preobrashénskoje /Preobrazhenskoye/. Every Tungus has a
648 Russian acquaintance, the wealthier ones the merchant himself,
432 to whom they turn when they need any kind of European goods;
426 it is given to them and nothing is said about the price, but a
return in kind is demanded, care being taken to see that the
pokrútschnik, as the Tungus entering into this relationship is
called, remains forever in debt, for his products are reckoned at
the lowest prices, while he has no idea of those of the European
608 ones. If the pokrútschnik cannot get hold of the money to pay
466 his jassak /yassak/, he becomes a complete slave of his protector,
571 who pays the jassak for him and for whom he then works;
in particular he must go squirrel hunting, the entire booty of
426 which falls to the protector. Even the wealthier Tungus complain
136 about the high jassak, and, in fact, it seems to have

/50 cont./

426 been standardized here when there were still a great many sables
136 along the Tunguska, which now, as was said earlier, are almost
136 extinct. The same has happened with regard to other fur-bearing animals, for instance, the beaver, which at one time was very plentiful in the source regions, but now only traces of its habitations are to be found. The arctic fox (Canis lagopus) was formerly very common around Ajakán, even eight years ago, and now it is a great rarity; in the year 1873 two /51/ specimens were captured. As for other game, the elk was formerly found along the Tunguska; now no trace of it is to be seen any longer in the part inhabited exclusively by the Tungus, and only in the upper part, near O'ssjkina, was an animal, which had probably strayed in from the Lena, shot several years ago. The musk deer occurs only along the Ilimpéja /Ilimpeya/, a tributary of the Tunguska in its middle course, and probably in a few places along the stony and almost uninhabited lower course of the Tunguska. Roe deer and red deer no longer go as far as the Tunguska; the wild reindeer, on the other hand, is very common from about the Ijeŝko on. The wolf and glutton are exceedingly rare; the bear, on the other hand, is found everywhere in great numbers. On the lower course we found fresh bear tracks at almost every landing place, but the animals themselves fled from the presence of human beings and we did not see a single one.

237 The present yield of skins is almost limited to squirrel,
224 ermine, and fox, and in addition is very mediocre in quality and few in number. During our whole journey, which led from the Tunguska through completely uninhabited regions, a dozen squirrels at most were shot by our Tungus, although they looked for them very intently, and the leader certainly had the best of chances, since he was far ahead of the procession.

181 In spite of the oppressive circumstances in which the Tungus
577 live, according to the above statements, we can nevertheless report mainly good things about them. Apart from their indeed frequent attempts to obtain petty gains, especially with regard to food, they proved to be absolutely honest in more serious
685 situations. Major thievery probably occurs only rarely, and the

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/51 cont./
685 best proof for that is that even the wealthy Tungus /52/ never
[114] lock their storage chambers. Castrén is not wrong when he
designates the Tungus as the "aristocrats of the wilderness."

771 The Tungus whom we met had all been baptized already;
in 1873 we met only one unbaptized Turuchánsker /Turukhansk/
[797] Tungus. At least outwardly they strictly observe the rites of
[778] the Greek Orthodox Church, all wear crucifixes, and among the
rich ones one finds, just as in every Russian peasant's house,
images of the saints, in front of which they crossed themselves
ostentatiously in our presence, just as after every meal that they
771 had with us. It may be taken for granted that Christianity
177 has not taken root very deeply among them, but consists solely
of externals, for they only very seldom come in contact with
clergymen and, since there is no scribe among them, cannot
[797] improve themselves further by reading. But they have, it seems,
a great leaning toward the Greek Orthodox Church and hasten to
[581] be baptized by the Russian clergymen, often very far away, just
they also lay great stress on being married by them; thus the
wealthy Tungus Uwotschán explained to us quite naïvely after
an illness that his young wife would probably have run away from
him if she were not married to him by the Church -- but then,
648 of course, it would be impossible. One must not forget, however,
186 that probably here too fear of the authorities has a very significant effect, and therefore sand is intentionally thrown into the
eyes of travelers sent by the government. The tolerance of the
Russian government, as well as of the people, toward those of
other faiths is sufficiently well known, but it does not follow that
every administrative official -- among whom very black /53/
sheep are often found in distant Siberia, as their frequent replacement indicates -- has this national virtue and so one should not
be surprised if the native tribes like to parade their Christianity.

756 Shamanism is certainly still firmly rooted here in the north
and will probably exist as long as the Tungus themselves, since
[123] it completely suits their lives and their activities. In the summer
of 1873 we had an opportunity to be present at a performance (it
can scarcely be designated as anything else) of the shaman

/53 cont./

756 Tschiglául Tschapógir, and I can say that I have seldom seen
123 anything more absurd or more boring. Dressed in a fantastic
costume hung with every possible rattling bit of old iron, he
danced around the fire of the tschum amid the most monotonous
singing, in which the choir of the other Tungus joined from time
to time, and from time to time beat on his shaman drum,
listened along the walls, whispered, then sang again, suddenly
went into ecstasy, and more of the same. The other Tungus
explained to us that he was calling the spirits, these gradually
[787] came, and he then conferred with them. When we finally be-
came impatient, he began to prophesy, but, of course, pro-
duced only nonsense. For instance, he told Czekanowsky, who
was unmarried, that his wife and children were greatly longing
for him, etc. The scene ended with each of us giving the shaman
a small tip, with which he was very pleased, and leaving, while
our people continued to sit and listen to him for a very long time.
This shaman was a hundred-year-old graybeard, and his mind
seemed to have been affected by his advanced age.

On our present journey we again met a shaman, likewise very old, but still much more vigorous. He was a famous shaman, for the Tungus said /54/ of him that he had already died three times and awakened again and he could push a palmá (spear intended primarily for bear hunting) through his chest and then place a child on each end. In our presence, however, he did nothing of the kind and merely left the impression of a very crafty schemer, in that, because two of his sons, Nerúndscha, the present schúlinga in Golé's place, and Spiridón, an excellent hunter and fisherman already known to us from the previous year, were to accompany us, he was trying to get various benefits in food and money for himself. Moreover, the men said that later, while shamanizing (which we did not attend, but the monotonous songs resounded far into the night), he prophesied that the wealthy Tungus Uwotschán, who was ill at the time and had promised to follow later, would not come, but would send a woman from his family. We were greatly inclined to believe this prophecy at the time, as were our men, but fortunately it was not fulfilled.

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/54 cont./

756 Who knows how many superstitious customs have been retained up to the present day by the most civilized countries; anyone who has heard anything of spiritism will not be surprised at the adherence of the Tungus to their shamans. They indeed do not merely regard them as sorcerers, but, on the contrary, in the boredom which they must certainly have during the long winter nights when there is almost nothing to do in the forest, the shamans are truly pleasant entertainers for them. Indeed, they sing the monotonous melody with which the shaman frequently conjures up their spirits in their presence, and it has become a regular folk song.' Shamanizing seemed to me about like the jolly /55/ fortunetelling of the Christmas holidays, especially on New Year's Night, which among us too, and, to be sure, in circles that basically are not susceptible to superstition, is popular as a pleasant pastime, especially for ladies. Certainly the shamans are not the simplest of persons; lively imagination, or even a talent for deception, is absolutely required of them. I do not want to pass judgment as to whether they themselves actually believe in all that they say.

159
756 One of our workmen, Ssénjka, a talented and very clever man about 20 years old, was able to accompany us only a relatively short distance, because he, as he himself and the other Tungus maintained, was frequently plagued by the devil. When these fiendish attacks cease, he will be a full-fledged shaman. He himself told us a long story about his seizures; for instance, he knows that the spirit tormenting him lives where four little streams unite into one, but he did not yet know this place, and other such foolishness. Who is to judge whether a really diseased condition of the organism or the imagination stimulated by frequent long periods of solitude, self-deception, or, finally,
756 simple fraud comes into play here! The memory of famous
769 shamans is preserved for a long time among their fellow tribesmen; on our journey down the Tunguska we were shown the burial sites of two shamans, Atyká and Koordón, who had died more than 100 years ago and on whose graves we found fragments of the weapons and beads from their adornment given to

/55 cont./

756 them to take along into the beyond, as well as their skulls. In
769 this connection I should like to say that the Tungus at present
764 bury their dead, following the Russian example, in the earth or
177 rather in the frozen ground, but formerly, simply in a sort of
coffin or box, which, /56/ in the case of distinguished persons,
was set on stakes, in the forest.

000 The reader will have ample opportunity to become acquainted with the Tungus in the course of the journey, just as we did, and so I shall now continue with the description of our journey.

/57/

Third Chapter

Arrival in Ajakán. -- The Uwotschán family. -- Scenery along the Tunguska. -- Mountain climbing. -- Further travel plans. -- Departure. -- First harbingers of spring. -- Terra incognita. -- Inconvenience of a herd of reindeer. -- Arctic boundary of the pine. -- Surface ice formations. -- First rain. -- Stunted forms of the larches. -- Difficulties of the journey. -- Easter. -- Uwotschán's arrival. -- Tungus guns. -- Golé's sense of direction. -- Natural connection between Jenissei /Yenisei/ and Lena. -- Lake Syrúngna. -- Further travels to the Jakóngna. -- Eye trouble. -- In the wilderness without a guide.

122 On the afternoon of March 2 we reached Ajakán (that is,
342 a small inlet of the river) at 62° 42' latitude, where two balagans
35 are found, that is, permanent wooden dwellings, and, moreover,
554 some storage chambers, a luxury that only the richest Tungus
are permitted. In the dwelling that we visited there was even a
Jakut /Yakut/ fireplace (kamelók) and the windows were covered
122 with fishskin. In the summer of 1873 we had met here the old
159 Tungus Uwotschán, the richest and most esteemed man in the
428 vicinity. He had died in Jerbochotschón /Yerbogachen/ and
was buried there shortly before our arrival at the Tunguska this
year, and we now had to deal with his youngest son, Peter, or,
as was said all along the Tunguska, Petrowán, who, as his father's

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/57 cont./

122 favorite, was his principal heir, whereas the other sons had already
159 been given a settlement during the old man's lifetime.
428

/58/ We had met him already during the previous year, when he had gone to Preobrashénskoje /Preobrazhenskoye/ on account of his trade interests, and had also made the acquaintance of his young wife, Golé's daughter. Since Czekanowsky had learned during his first stay in Jerbochotschón that the young heir did not intend to provide the reindeer promised by his father the year before for the expedition, he procured, by means of Golé's influence in particular, a communal resolution by the Tungus present in Jerbochotschón, according to which Uwotschán was obliged to fulfill the promise of his father, and this resolution was forwarded to him by a messenger. He complied with it immediately and in fact arrived in Jerbochotschón with his animals on the day set. From there he went with us for a long stretch and only a few days of travel before Ajakán hurried ahead in order to take care of the necessary preparations for the further journey and also in order to look after his wife, whom he had left [23] advanced in pregnancy. Shortly before reaching Ajakán we received the sad news that he had suddenly become ill, but did not really believe it, because we knew, of course, that he did not want to undertake the trip to the Olenék with us on account of his trading business. Unfortunately we became convinced that he was really sick with an inflammation of the lungs. In the hope of a speedy recovery we waited several days and cared for the patient with medicines from our travel stores, until it became evident that he would certainly need some time in order to recover completely.

133 From Ajakán on one has a pretty panorama of the mountain range that, beginning shortly before Ajakán, accompanies the Tunguska up to a few versts before the mouth, and, although it makes a very pretty impression here, nevertheless because of its monotony it /59/ wearies one to the highest degree as one goes on: one and the same table mountains, often several versts long and so level on top that my triangulation at their various end points gave a difference of scarcely a couple of feet. /The remainder of p. 59 and the first two paragraphs of p. 60 are omitted in the translation. Page 60 continues as follows./

/59 cont./
000 omitted in the translation. Page 60 continues as follows./

/60 cont./ The days that we spent in Ajakán were de-
122 voted particularly to consultation about the route to take farther on, because some differences of opinion about this prevailed among our Tungus. It was finally decided to go down the Tunguska, of course cutting off the great bends as before, to
115 the mouth of the little stream Kópokit. Dmítrij, an older
122 brother of Peter Uwotschán, who had just been over this route, wanted to accompany us from there to the Jjeíko River, whose mouth into the Tunguska at 63° 29' we had passed the previous year. Then an old Tungus was supposed to take over the leadership, a man named Dargá, /61/ who knew the route in detail as far as Lake Syrúngna in the source region of the Wiljúi /Vilyui/, by way of which our journey had to go, because he had formerly lived there himself and had even visited the Olenek once from there. At the Syrúngna finally we hoped to find a new guide to the Olenek, sent to us from Wiljuisk /Vilyuisk/, since the isprawnik /ispravnik/ of the Wiljuisk district had received the pertinent orders from the governor general.

After a stay of no less than eight days we finally departed early in the morning of March 10 from Ajakan, where we had to dismiss a guide hired originally for our whole expedition, the above-mentioned peasant Balákschin. He was not adequate, either as an interpreter or as a worker, in part on account of his advanced age, for the demands that we had to make of him. As an interpreter a young Tungus, Sseliphón, appeared to be far more qualified, while, to be sure, with regard to his conduct otherwise, he left much to be desired.

122 On the day of our departure from Ajakan I noticed the first signs of the approaching spring, willow catkins of considerable
000 size, which adorned the tips of a thicket. /The remainder of the last paragraph of p. 61, pp. 62-63, and the first paragraph of p. 64 are omitted in the translation; see the foreign text. Page 64 continues as follows./

132 The latter /the little Kíhinti River/ made very great
[122] difficulties for our procession because of its Aufeisbildungen

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/64 cont./

132 /surface ice formations/, which upon further advance were even [122] followed by rapidly flowing water. Since the phenomena of Aufeis /surface ice/ in Siberia are still not adequately explained by far (more details are to be found in Middendorff, Sibirische Reise /Siberian Journey/, Vol. IV, Part 1, No. 3), I am limiting myself here to the remark that they have absolutely nothing in common with the surface water /Aufwasser/ occurring everywhere in Europe, which, with the subsequent occurrence of freezing, is again covered with a new crust of ice. A principal cause of this phenomenon in Europe is the not infrequent rain even in winter in view of the changeable climate or also damage to the ice cover caused by human beings, of which there can be no question at all here in the north. In connection with the larger Siberian rivers which are not frozen through and through, the water probably comes out through cracks in the ice which are formed in very intense cold by the contracting of the ice cover, but this explanation is not applicable in the case of smaller waters completely frozen down to the ground; one therefore has to think of springs, which, however, in view of the perpetual ground-ice, are likewise difficult to explain. Only precise observations concerning the temperature of the snow cover during the whole period of its duration and at various distances from the earth's surface, continued over a long period of time, might perhaps make it possible to solve the puzzle presented here. I want to add further that on the very numerous lakes crossed by us I have not seen traces of any such Aufeisbildungen anywhere.

On the Kíhinti we also encountered the first rain of this year; /65/ at 8:00 in the evening the temperature was still + 2.3° R., but fell again in the course of the night to −8.5° R. (very insignificant compared to −13.8° R. during the previous night and −23.5° R. the night before that). Thus, spring was [137] here, unusually early for these latitudes; one already saw catkins of different species of willows everywhere.

133 Our journey again led us on over a low watershed in the 122 area of the Wiljúi and, to be sure, a very well-known tributary of it, the Wáwa. The trip was very monotonous, now broad plains

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The trip was very monotonous, now broad plains

133 /65 cont./

122 covered with a little brush and, probably even in summer, only
137 sparse vegetation, outside of the reindeer moss present everywhere in masses, and then again stretches of woods, consisting almost solely of larches, for white birch and fir were already beginning to become rare. The little larches themselves, though still very far from the limits of their range, were severely stunted; in particular there were often trees on which the trunk branched out in a number of almost equally strong branches which formed a round crown, looking as though it were shaped artificially by the hand of a gardener.

122 The nature of the snow presented greater difficulties every day; in many places the crusts of snow first had to be hacked to pieces with axes to make it possible for us to pass. If, as often happened, one of the reindeer broke through and with it half of the narte, the one sitting in it invariably took a bath in the deep snow and was fortunate if he were not hurled against a tree, as happened to me once, but without any serious consequences. It was only on the lakes, appearing very frequently here, that the trip progressed unhindered. Hunting, in
224
123 view of the deep snow, /66/ was unthinkable, and besides there
122 was no time for it. Only once could the Tungus, whose passion for hunting had reached its height at the sight of very fresh reindeer tracks, be permitted to satisfy it, and in the evening there was brought home to us in triumph a magnificent buck, for which the happy hunter received a few rubles in powder money. Incidentally he had used our American carbine, which, after brief experimentation, he knew how to handle very well.

122 On March 29 we halted for several days on the shore of the Wáwa, not far from the mouth of the main tributary, the Ssenatschángna, in order to give our very weary people, as well as the reindeer, time to rest. At the same time Easter was
[115] celebrated, which for us, too, was made very joyful by the quite unexpected arrival of young Peter Uwotschán, who, though still weak from his illness, had hurried after us with his wife and newborn child. He was, of course, received by us as hospitably as our means allowed and was for the first time our standing guest at dinner. In the previous year we had already

/66 cont./ In the previous year we had already
122 noticed that our kitchen, of course not exactly luxurious here
123 in the wilderness, was nevertheless greatly appreciated by the Tungus; I regard it as very improbable, however, that any of them, even though they were present daily during the preparation of the food and young Sseliphôn often functioned as cook, will ever cook for himself according to our fashion. Innate laziness and adherence to the habits of the ancestors are the reasons for this, because the few ingredients that distinguish our cooking from that of the Tungus could easily be obtained by the wealthier ones from merchants along the Lena. It was only
[262] sophisticated /67/ foods, such as cacao, that the Tungus did not relish; indeed, even our Cossack, born in Irkutsk, who on all occasions boasted of his culture, found that it tasted exactly like black-alder berries (tscherjómucha), which incidentally ought to be complimentary, for these berries, raw and cooked, are a delicacy throughout Siberia and for the inhabitants completely take the place of the cherries lacking there. /

411 A holiday pleasure was trying out our guns. While our
[177] American carbine (breechloader) and our revolver aroused the greatest admiration among the Tungus, I for my part tried out the Tungus guns, which have now entirely replaced the former bows and arrows which are still found today along the Amur. Even though we often inquired about them, we did not see a single example of these old weapons among either the Tungus or the Jakut /Yakut/. The bow is used only in springtraps; for other hunting, firearms are used exclusively. Considering merely the look of the latter, which mostly come from Tula, have a very small caliber in view of the considerable thickness of the barrel (the bullet is not much bigger than buckshot), and are provided with a firelock and a most primitive butt end which scarcely permits proper aiming, I had previously admired the skill of the Tungus, who seldom missed squirrels, ptarmigan, and the like, almost always with the guns on the rest, however. Now I found that these insignificant guns actually shoot very accurately, for three shots that I made from different guns handed to me, among them one of large caliber for bear hunting, hit the mark, to the great admiration of the Tungus.

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/67 cont./

411 The latter are by no means all good marksmen. /68/
159 Many of them, Peter Uwotschán in particular, were much poorer
shots than I, even though I can scarcely boast of my skill. One
823 rarely finds hunters like old Golé, even among the Tungus. He
159 is in every respect the ideal bushranger -- the Siberian designation for this is taijóshnik (from the word taigá, virgin forest) -- not only a good marksman, but also a tireless walker; most of all I admired his sense of direction. Once, after a preliminary calculation of my astronomical position, I said to him: if one could travel south from here as the crow flies, which, of course, is impossible because of the intervening mountains, one would, after so many versts, reach the Tunguska, and, to be sure, at the mouth of such and such a river. He thought for a long time and then agreed with the distance, which he had reduced to days of travel at 60 versts a day (on foot with snowshoes), but he thought that he would reach the Tunguska some versts above that river mouth, which was wholly correct according to my reckoning, the results of which I had, to be sure, given him only very approximately. Golé had never before been in the region where this conversation between us took place, the Tunguska was several hundred versts away, with mountains in between, and we had by no means come here by a very direct route.

115 Besides Golé, our guide Dargá was also a very excellent
122 bushranger, only somewhat too old for it. Up to here he had guided us successfully, although we ourselves could perceive only rare signs on the route, hacked trees, by means of which these woodsmen find their way everywhere, and here and there the pole framework of a tschum /choom/. Sometimes, however, he too would go astray. After we broke camp again on the morning of April 2, we went along /69/ the Wáwa for several days, up to its sources. Here, however, old Dargá explained that he had lost the traces of the road and therefore had to climb a nearby high hill in order to orient himself from there. We therefore stopped again for a rest day. In the evening Dargá returned satisfied and also brought us a white hare, the only one that we had seen during our journey, although we noticed their tracks here and there. Dargá had also found the tracks of a sable, but could not follow it because of lack of time.

/69 cont./

122 The night from the sixth to the seventh of April we spent on the Turú or Turýga River, which, although a very insignificant little stream here, is nevertheless one of the most important tributaries of the Tunguska. From here on we now finally abandoned the river system of the Tunguska in order to go over
133 to that of the Wiljüi /Vilyui/. The watershed is formed by a
[103] rather high and steep mountain range, which the Tungus call
Anáon. Our route led across a small lake which, occupying a deeply cut saddle in the range, had picturesque rocks towering high above it on both sides. We were interested in Dargá's statement, not wholly certain, to be sure, that this lake, by means of small brooks, was connected with both the Turú and the Wiljüi. We ourselves were convinced of the existence of an outlet to the Wiljüi, but we unfortunately could not confirm by personal inspection whether there was also one to the Turu. Be that as it may, such a connection between the two mighty drainage areas of the Jenissei /Yenisei/ and the Lena would be of great interest, even though completely without any practical significance, since the little streams connecting them are much too insignificant to make navigation possible, be it ever so light.

122 After we /70/ had passed innumerable small lakes,
[133] mostly connected with one another by small streams, on April
8 and 9, we finally reached Lake Syrúngna on the evening of
122 the ninth. Through a kind of triumphal gate, formed out of a
782 rope hung with various scraps of paper and pieces of cloth and
776 drawn from one tree to another, we established our camp for
[171] the night on the south shore of the lake. As was explained to
us, this was a show of respect by our advance guide for the spirit of the lake -- again a reminder from the shaman period, which reminds one of similar practices among the Burjaten /Buryat/ in southern Siberia.

122 As has already been mentioned, we had certainly hoped to find men on the Syrúngna -- but we had deceived ourselves. During the last days of the journey, to be sure, we had frequently found traces indicating that human beings must have stopped here, at least temporarily: abandoned huts, with panes of ice in place of windows, and therefore certainly still inhabited at the onset of winter, chopped wood, even fishing

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/70 cont./

122 apparatus, and a path last used in the autumn, according to the
Tungus, but, on the other hand, not a single fresh human
track, which would be easy to recognize in the deep snow.
Even on the lake itself and in its vicinity there was not a trace
of a living soul. Therefore, if the isprawnik /ispravnik/ of
Wiljuisk /Vilyuisk/ had sent guides for us, they had not yet
reached here, for their tracks could not have escaped us.

We were in great difficulty, because our Tungus had
only bound themselves to take us and our baggage on their
reindeer up to here, and we could only be grateful to them
[439] when they now agreed to take us farther. It would have suited
them too, however, to meet human beings, for information
about the local trade conditions was very important to them;
petty transactions, especially bartering reindeer, /71/ could
be undertaken at once. It was therefore decided to push on
from here to Lake Jakóngna, as far as our old Dargá claimed
to know the route and where human beings supposedly are always to be found.

122 I used the tenth of April, on which our people searched
133 the surroundings for human beings, to determine the height of a
grotesque mountain peak bordering the broad valley in which
we found ourselves, in addition to my customary astronomical
and magnetic observations through triangulation, for which
the smooth ice surface of the lake offered a suitable base.
133 Visual inspection showed it definitely to be a trap range, mountains in exactly the same table shape as along the Tunguska.
Triangulation, in connection with the barometric surveying
done up to here, gave a height close to that of the highest table
mountains measured along the Tunguska, namely, about 2,000
122 feet above the river named. On April 11, after a short trip
133 across Lake Syrúngna, we made a stop at the north end of it; on
the twelfth we camped on the Wiljúi River, the width of which
was 177 feet here; on the following days, too, we advanced
vigorously, traveling mostly over the ice covering of the lakes
and little streams connecting them, with ever renewed and ever
disappointed hope of meeting human beings or of being overtaken

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122 /71 cont./
133 by the guides expected from Wiljúisk, who could not miss our broad trail from the Syrúngna. On the evening of the fifteenth, we again reached a lake, which our old guide designated as the sought Jakóngna. This statement, however, proved to be incorrect; the lake was much too small to be the Jakóngna, even considerably smaller than the Syrúngna. Our old Dargá, who,
[115] like our entire escort, suffered from severe eye trouble, despite protective veils and snow goggles, was too affected to guide us any farther and so /72/ we again had to wait a day for his recovery. It is true that the snow covering, principally in the spring, even though for a long time it has not been as white as in the middle of winter, has an injurious effect on the eyes. In the real winter, with mostly clear skies and sunshine, one would expect much more difficulty than with the often overcast spring sky -- it is exactly the opposite, and I have noticed the
[293] same thing myself in cities. Even the natives, living in the open from childhood on, in the absence of dark glasses or veils, which they first became acquainted with through us, wear peculiar metallic snow goggles, which offer only a narrow slit to look through.

[103] After another short day's journey, we again halted beside a lake, whose name, Ukykít, became known to us -- to be sure, only after several months -- from the statement from an old Tungus. We were delayed here for five days because of heavy snowstorms, which on the first day alternated with rain. Our people, no less than we, most earnestly longing for human beings, roamed through the region in all directions, despite the bad weather -- but in vain. Huts with implements, indeed even a multitude of graves, were discovered -- had the men died then to the very last one or had a migration of people passed this way? We were unable, even later, to obtain a wholly satisfactory answer to these questions.

121 On the nineteenth a rather extensive lunar eclipse ap-
123 peared, which I, since it was unimportant for my position-finding, had completely forgotten. Fortunately I noticed it early enough and could -- although the effect would have been even considerably greater by predicting it before it started -- /73/ calm

/73 cont./
821 the astonished Tungus (who, it seemed, were completely un-
123 familiar with the phenomenon) by some detailed statements
about its further course. Since, as I said, the moon did not
disappear completely, but on the contrary the darkness began
to decrease at the time previously announced by me, the ex-
citement of the people, which just at this time could easily
have been disastrous for us, gradually abated. So they were
amazed only at my wisdom, and the view also beginning to ap-
pear, that this unheard-of phenomenon might be a bad omen,
was fortunately disproved.

122 My observations, finally made possible on the last day,
gave for the latitude of the locality 65° 57', and we were there-
fore only half a degree away from the Arctic Circle. On April
20 we finally reached the Jakǒngna, or rather a lake belonging
to this group of lakes. Again the thorough search of the
vicinity by our people took several days -- the result was al-
[161] ways the same. The reader can imagine our frame of mind.
In a region otherwise relatively well populated, according
to all that we had heard previously and even now must conclude
from many signs, there was now not a living soul who could
give us information about the Oleněk, which certainly could
no longer be far away. Where were we to turn? What would
become of us if our Tungus refused to go any farther? They had
already done their duty long ago, and if they wished to go we
could not have prevented them in any way from doing so.
[484] Fortunately for us, however, the way back was as good as cut
off for them too, for, not only was spring so far advanced that
[231] the condition of the snow cover, and particularly the rivers,
would no longer permit them to return to their distant homeland
-- also the condition of the female reindeer, whose calving
must soon begin, /74/ prevented further traveling, because
during the first days the calves must be greatly pampered and
are not in a condition to travel any long distance. The same
reasons, however, also opposed our further advance.

/74 cont./

122/133 If we remained here, our expedition was practically a failure; we now had to reach the river which we were supposed to explore, in order, during the weeks which would pass before the breaking up of the ice, to complete the building of the boats which were to carry us downriver to the Arctic Ocean. It was therefore a matter of discovering the Olenék. It was to be sought, according to all that we had learned about it, in a direction northeast of here; perhaps it even originated out of the great lake-complex on which we now found ourselves. Golé, who tirelessly roamed over the vicinity on his snowshoes, especially to the north and northeast, finally discovered a river which indeed might possibly be a source stream of the Olenek, since it exhibited the required direction and also had a relatively considerable breadth, up to 40 sagenes. Lacking other data, we accordingly decided to follow this river and broke camp again on the morning of the twenty-third.

/75/

Fourth Chapter

Involuntary end of travel by sled. -- Environs of the spring camp. -- Within sight of the Arctic Circle. -- Boatbuilding. -- Decrease of the tree growth. -- Temperature at various heights above the surface of the snow. -- Arrival of the birds of passage. -- The first insects. -- Move to summer quarters. -- How one exorcises devils. -- Pilfering by the people. -- Breaking up of the ice. -- Flora and fauna. -- Midnight sun. -- Short boat trip. -- Meeting natives. -- Bad news. -- Departure for the Olenék. -- Riding on reindeer. -- Plague of mosquitoes. -- Abundant mountain flora. -- Finally, arrival in the Olenék region.

122
133 Our presumption that we had actually discovered the Olenék was essentially confirmed when on the next day we reached an even larger river, which likewise, apart from considerable bends, seemed to go toward the northeast and which our old guide Dargá, the only one of us who had previously seen the Olenék, recognized as such with the greatest firmness. To be sure, he called it O'lena, but mentioned many tributaries which we knew belonged to the Olenék.

/75 cont./

888 which we knew belonged to the Olenėk. Our wish to advance if
122 possible to the Arctic Circle, which was no longer far away, was thwarted by the great bends of the course of the river, which we, with the region completely unknown, unfortunately could not cut off. Nevertheless we advanced for a couple of days, during which the surface water of the river made many difficulties for
[233] us. Also the calving of the female reindeer began. /76/ The Tungus declared any further advance impossible, and so we then had to end our land journey on April 27, after the men sent ahead had found a place in whose vicinity suitable tree trunks for building a boat were to be found. /The last paragraph on p. 76, pp. 77-79, and the first paragraph on p. 80 are omitted in the translation; see the foreign text. Page 80 continues as follows./

We had chosen our new camping place especially with a view toward being able to superintend the work on the boat in the immediate vicinity, for it proceeded only very slowly, while the rising of the river and the condition of the ice cover demanded haste. Our men were obviously disheartened by the complete absence of human beings, by the lack of any news from Wiljuisk /Vilyuisk/. Over two months had passed since we had left the Tunguska; we had met no human being and none could have crossed our trail, for it is scarcely to be assumed that such a one would not have followed us -- out of curiosity or out of /81/ self-interest, for he certainly would never have seen so large a traveling party.

787 A very serious symptom appeared among our traveling
123 companions a short time before our change of residence. One of the Tungus, Spiridón, who came from a well-known shaman family, as I have already mentioned above, was visited by the devil one fine evening and bored us the entire night by his insufferable wailing. The Tungus hung their heads, probably as a result of his silly predictions, and even old Golé explained that the sick man must be permitted to go to his homeland. But that would absolutely never do, for a bad example is demoralizing and the whole band might easily follow the one. It was therefore necessary to set an example and to drive out the devil methodically. In consideration of our position, flogging was not indicated.

Tungus RU5

/81 cont./

787 /23 So withholding his wages and a strict diet were ordered during the devil's visit, and when even that was of no avail, the ultima ratio -- a good dose of Sel de Guindre (a close relative of Sal mirabile Glauberi /Glauber's salt/), a remedy for which the Tungus had great respect, since the Cossack, with characteristic geniality, had swallowed a large bottle of this liquid all at once and, of course, almost gave up the ghost as a consequence. Even a Tungus devil is not accustomed to such hellish brew, and it was heartening to see how quickly he left our man, who had completely recovered after a few hours.

/22 /23 We could not cope as easily, however, with the much craftier human beings as we could with this stupid devil. Our supplies, especially flour and zwieback, diminished at a suspicious rate, and in spite of all threats we could only temporarily check this pilfering somewhat, but /82/ never suppress it entirely during the entire extent of the stay of the women and children.

One of the chief rascals was the young Tungus Sseliphon, invaluable as an interpreter. While the Cossack slept, as usual, he would take the best pieces from our kettle, as well as the fat, now very rare on the reindeer, so that during this period we greeted a globule of fat on our soup as the greatest rarity. Also, in the preparation of the dried reindeer meat, the ssulíkta, for which we had bought four reindeer at a high price from Uwotschán, we were roundly cheated and obtained scarcely one and a half poods. Unfortunately old Golé was the chief culprit in this instance.

/22 /32 Immediately after our change of residence, as has already been mentioned, cold weather appeared again, snow fell daily for over a week, nightly cold still continued without interruption up to May 29 and on the twenty-sixth and twenty-seventh reached -5°R. With that, however, the force of the winter was broken; on May 28 the maximum of the temperature in the shade was already +13° R., and it then climbed so quickly that on June 1 it had already reached +21.2 R., from where, to be sure, it fell again. /The remainder of the last paragraph on p. 82, p. 83, and the first paragraph on p. 84 are omitted in the translation; see the foreign text. Page 84 continues as follows./

/84 cont./

122 In the meantime the interior arrangement of our boat was completed and the stowing of the supplies began. I must remark, incidentally, that the reader should by no means imagine a European boat; if I am to venture a comparison with another vessel, I can only say that it was similar to a struse -- which, as is well known, is the name for the very primitively built vessels that every year come down in great numbers, loaded with flax and grain, out of the interior of Russia on the Düna to Riga and are converted there into lumber or firewood. For short trips, especially for fishing, we also had a birch-bark canoe, which, if necessary, could carry 4-5 persons /85/ and

122 501 [171] for which we had brought the material with us from the Tunguska. It was put together during the last days by Golé and Uwotschán and was properly calked. They knew very well how to go about this work, for such birch boats are also used on the Tunguska, where, however, they are usually much smaller; ours was specially arranged for the expedition. One man with a double paddle fully sufficed to steer it.

122 [133] On June 7 the water had fallen so far that we decided to set out on our journey. We shoved off, accompanied by the cheering shouts and parting shots of the Tungus remaining behind; young Uwotschán, along with his wife and child, insisted on accompanying us a few versts farther. Our actual traveling party now consisted of six men, the two of us, the Cossack, and three Tungus. The still considerably swollen river carried us very rapidly, but because of that on the many sharp bends we were frequently in danger of getting into the submerged underbrush of the shore and could go forward only with the greatest efforts of the men, especially the steersman; we therefore decided, soon after we had also taken leave of Uwotschán and his family, to stop at a favorable place and wait one or two days for the river to fall.

We were scarcely on the shore five minutes when three strange figures came rushing at us, a graybeard and two boys behind him, ready for war with outstretched palmás. Calmed by the Tungus shouts of our people, they soon put aside their weapons and now, of course, the burning question immediately

/85 cont./

122 came to tongue: were we on the Olenék? Who could portray
our horror when the man pointed to the direction from which
122 he had come! There to the northeast, about 150 versts
133 away, /86/ lay the Olenék; we were on a source stream of
the Chátanga /Khatanga/, called Mónjero /Moyero/, which
was also noted on a few maps, in an entirely wrong location,
to be sure. And not content with that, the old Tungus declared
that a trip down the Mónjero was a decided impossibility,
because high waterfalls -- not rapids, which he well knew how
to distinguish -- blocked the channel of the river. This statement brought us to further ponderings over whether we should
actually go to the Olenék or, considering the advanced season
of the year, explore the river on which we found ourselves,
also unknown to be sure, and then try to reach the Jenissei
122 /Yenisei/. Despite everything, how fortunate for us that we
had received this bad news on this very day! Even in the
morning we could no longer have reached the Tungus still
lingering with their reindeer at the camp, and with that our
last chance to reach the Olenék, indeed even turning back,
would have been cut off. It was scarcely half an hour before
Golé, who had immediately declared himself ready to make his
reindeer available for the journey, for adequate compensation,
as well as to persuade his son-in-law Uwotschán, sat in the
little birch boat and hurried back with rapid paddle strokes.

122 The next day was very difficult. Again the fate of the
123 expedition was entirely in the hands of the Tungus. A caprice
[56] on the part of Uwotschán or even his young wife -- for the
latter often had an important voice among the Tungus --
could make our whole undertaking fail. Fortunately everything
started off well. On the evening of the next day Golé appeared,
with him a part of the reindeer, which had remained in the
vicinity on the bank of a little stream, and 24 hours later
Uwotschán too, with the remaining reindeer and the /87/ people
required to manage them. Unfortunately, again found among
the latter were a woman and the approximately ten-year-old
son of Golé, both of whom we had been glad to be rid of, for we

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/87 cont./

122 had good grounds for suspecting them of illegally reducing
123 our supplies. But the Tungus declared that they had to take
along at least one woman for the cooking, and one must
likewise shut his eyes with regard to Golé's son, because he was
his father's great favorite. He was actually the model of a
street Arab and could have been recognized as such even in
Europe. I promised him many a sound thrashing when he crept
after me while I was hunting and, when I was just ready to
shoot, came leaping out with howls of joy and put the
frightened game to flight, but -- the Nuremburgers hang only
those whom they have actually caught. The youth prudently
always remained ten steps away from me.

122 We now quickly packed our things for transport by land,
a very difficult task because, as has already been mentioned,
only about two poods could be loaded on a reindeer; another
part of the men made the necessary pack saddles, the simplest
137 wooden frames. In the meantime I examined the surroundings,
122 which were displayed very advantageously in front of our
spring camp; in particular I found here a great number of
species of willow (*Salix viminalis* L., *S. pyrolaefolia* Ledeb.,
S. myrtilloides L., *S. boganidensis* Trautv., *S. glauca* L.,
S. fumosa Turcz.), which were just in the most beautiful
bloom, and other spring flowers, such as *Andromeda polifolia*
L., *Caltha palustris* L., *Trollius asiaticus* L., *Nardosmia
frigida* Hook., and the like. Peculiarly enough, here too the
larches showed no catkins, which had already struck us in
the vicinity of our camp. During our further travels too we
could /88/ discover no fresh larch cones, although our atten-
tion was constantly directed at this. Could an unusually cold
autumn have been the cause of this phenomenon? We could
136 give no satisfactory answer to this question. In the vicinity
122 lay a long series of lakes, along whose shores, as well as on
the surface of the water, almost entirely free of ice, the water
[126] and swamp birds wheeled about; many a one was captured,
also a few nests with eggs, which were blown out and likewise
incorporated into our collections.

Tungus RU5

/88 cont./

122 On June 11 we were ready to depart. As a guide we had
the old Tungus whom we had met here and who had just come
from the Olenék with his family. It had been quite difficult
122 to persuade him; he preferred that we take his son, who had
411 gone upriver on a journey of a few days in order -- this is
224 literally true -- to look there for a bullet that he had shot and
in the haste of passage had not been able to find. The whole
family possessed only three bullets in all and therefore had
good reason to be thrifty with them. Lead is quite dear gen-
erally in Siberia, and in some remote places the hunters, if
possible, try to shoot their booty in such a way that the bullet,
if the shot misses, remains stuck in a tree. After five days the
young man had not yet returned -- his task, to be sure, was
not an easy one, even for a Tungus -- and so the old man ac-
122 companied us. Sometimes riding a reindeer also well along in
147 years, according to the mighty antlers, sometimes leading it
123 by the reins, he went ahead of our procession, vigorous as a
young man, and shamed us Europeans by his endurance, but
particularly the Cossack, with whom it did not go well at all.

122 To be sure, advancing was not easy. We were almost
[137] always going over a /89/ swampy moss-tundra more or less
covered with trees, which at best was still frozen two inches
under the surface, so that the foot clad in the heavy waterproof
boots fitted with iron tips continually slipped on the tussocks.
We, including Czekanowsky, went on foot for two days, he
with the compass and notebook in hand, leading the march, I
laden with my hunting apparatus, since there was no lack of
opportunity to shoot. The Tungus all rode; on the third day
we could only decide to do that ourselves, for we were afraid
of holding up the procession by our going on foot. /The remainder of the fourth chapter, pp. 89-94, is omitted in the
translation; see the foreign text./

51: Müller--63 N-2 (1873-1875) 1882 RV2 Yakut

Tungus RU5

/95/

Fifth Chapter

The Olenék at the mouth of the Tomba. -- Interesting result of the magnetic observations. -- Paying off the Tungus. -- On the raft. -- Shallows and bends of the river. -- Difficulty of astronomical observations. -- Mosquitoes and other insects. -- Lack of meat for food. -- Scenery of the landscape. -- The mouth of the Alakít. -- Goose hunting. -- Tungus terms of invective. -- Grave situation. -- A graveyard in the wilderness. -- Finally people again. -- The guide Nikolai. -- How names originate. -- Tungus legend.

122 [103] Late in the evening on June 28, in frightful weather, streaming rain and a violent west wind, and completely soaked through, we reached the mouth of the Tómba and hence the long-sought Olenék, or, as the Tungus called it, O'lena -- the Jakut /Yakut/ name, which we did not learn until much later, [133] is Elán. It does not present a very imposing appearance here; not much broader than the Tómba in its lower course, at most 20 fathoms, it flows between low banks. Only by the surroundings, still flooded a short time ago and even now still very swampy and traversed by streamlets, as well as by the flood's vestiges clinging on the trees and bushes, could one see that at high water the Olenék must be a very respectable stream. Not until about 4:00 in the morning did we go to rest, barely dried out a little, and did not wake up until noon. Our stay at the mouth of the Tómba lasted /96/ until the evening of [132] July 2. The men with the logs intended for the raft did not reach us until June 30, arranging and loading it also took time, as did drying out the provisions, particularly the zwieback, which was thoroughly wet and had to be dried over fire. This was delayed by the rain, returning several times in almost every hour, which also made my observations very difficult and almost completely fruitless.

Tungus RU5

/96 cont./

133 With difficulty, and interrupted by several showers, I succeeded in determining the latitude of the position as 67° 18', the longitude as 124° 27' east of Ferro /Hierro/. My magnetic observations at this position, in connection with the earlier ones, led me to the quite unexpected result that the Siberian pole of the greatest magnetic intensity, which, according to the theory of the earth's magnetism developed by the famous Gauss, I had to approach, or which I had to reach, by observing a northeastern direction almost to the mouth of the Olenék, already lay to the south of me, the theory therefore deviating considerably here from the reality (1).

1. This result was confirmed throughout by my later observations, and therefore the maximum of magnetic intensity is to be sought between the Olenék and the Wiljúi, at about 64-65° latitude.

122
123 On the last day, after we had corrected and supplemented our correspondence concluded along the Mónjero, particularly the official reports to the Imperial Geographical Society, according to the events that had occurred since then, the people who had almost without exception served us faithfully and honestly up to here, if one ignores the petty deceptions, which almost entirely concerned food, were finally paid off.

/97/ Our old guide from the Mónjero to here was most overjoyed. He received two pounds of powder, which corresponds to the value of two reindeer here, a portion of lead sufficient for it, an ax, which is valued here at five rubles, and many other things which we civilized Europeans regard as little trifles, but to the poor Tungus are a great treasure. As for the rich Uwotschán, who had certainly served us at his best for almost five months, personally and with his reindeer, and without whose help (absolutely not obligatory, it is to be noted) we could never have reached the Olenék, we could only pay him the money coming to him, and at most in addition a dram of spirits from our last bottle of cognac, which, as an indulgence long missed, was very well received, but

122 /97 cont./
123 hopefully the Imperial Geographical Society will fittingly reward his services for the success of our expedition (1).

[292]
[171] 1. In the name of the Geographical Society, gold-embroidered caftans of honor, a very popular distinction among the indigenous tribes of Asia, were conferred upon him and his father-in-law, Golé.

122 Toward evening on July 2 the people set out with their reindeer; only Peter Uwotschán still remained, took the correspondence, and, as we got underway about 8:30 in the evening, saluted in customary fashion with a musket shot, which was also answered from our side. A few minutes later he was on his way home, and we turned out of the Tomba and into the channel of the Olenék. Our traveling party had shrunk [123] considerably. We were now five men in all: besides Czekanowsky and myself, the two Tungus, Golé and Sseliphón, and the Cossack, who, unfortunately, was more and more proving to be useless. /Pages 98-99 and the first paragraph of p. 100 are omitted in the translation; see the foreign text. Page 100 continues as follows./

122
136 If the weather was an often insurmountable obstacle for my observations, there was nevertheless also a second one, which, although I was always successful in prevailing over it, still sometimes almost made me despair -- the mosquitoes [293] and gadflies. If one is unoccupied or has no fine work to take care of, one can probably protect himself to some extent, the hands by means of gloves, the head by mosquito netting, a hood of cotton cloth with a screen of horsehair for the eyes, which is drawn over the head and extends to the shoulders, where it can be drawn together. Even the Tungus, who are certainly more hardened than we Europeans, make use of these means of protection. In greater heat, however, they are very unpleasant, and I almost never used them. /The remainder of p. 100 and p. 101 are omitted in the translation; see the foreign text./

/102/

122 I have forgotten up to now to speak of a species of insect which,
136 although very small, is nevertheless one of the greatest annoyances that civilized travelers encounter in the wilderness. Here too I refer to Middendorff (Sibirische Reise /Siberian Journey/, Vol. IV, Part 2, No. 1, pp. 833 f.) and with him praise the inventor of linen, by means of which the "buckskins" of our forefathers, along with their inhabitants, were gradually suppressed, so that at present the well-bred European can manage even without the unavoidable "three" that Middendorff's guide designated as absolutely essential for life. On a journey linen cannot be washed; one can only very rarely, especially in the cold months, take off one's clothes and wears them day and night -- the consequences do not fail to appear after a few weeks. The single effective remedy against this is mercurial ointment, the use of which, however, is also hazardous. Only the head can be kept clean by means of constant combing -- a benefit as well. A favorite pastime of the Tungus around the campfire is to rid themselves of the inhabitants of their hair, which fall into the flames like pattering rain.

126 Along with the increase in number of the mosquitoes, the
136 number of other insects also rose, especially the butterflies, and our collections rapidly grew. In particular the genera Colias, Argynnis, and Eurebia were abundantly represented, both in number of specimens and, it seems, in number of species; similarly there was no lack of moths, and soon Noctuae appeared in great swarms, but very few species. It was only beetles that we found in fewer numbers than before, but perhaps this was because our stopping places were quite uniformly of a nature not suitable for beetles. Our two Tungus were soon diligent butterfly hunters and brought very good specimens, since only these were /103/ paid for at one and a half kopecks each, but the rest were thrown away. With regard to birds, we caught a couple of falcons, which are common here, and a few
226 smaller birds that we lack. The Tungus also provided us very
123 abundantly with fish. Ssigí /sig, species of salmon/, lenkí, and pike were frequently caught; the latter in particular were speared by Golé in a very skillful way with a trident (Tungus kiramkí). They were a pleasant addition to our diet, which was beginning to become somewhat restricted.

/103 cont./
~~100~~ beginning to become somewhat restricted. The dried reindeer
122 meat, with which this year we had had no luck, came to an
end; there was only a little ham left and moreover it already
showed signs of spoiling, so that it had to be eaten very soon.
There thus remained only our supplies, actually very abundant,
of flour, groats, zwieback, and peas, as well as butter, which,
however, could be kept from melting only with difficulty,
for even the water had a very high temperature, which, at
least at night, was much higher than the air temperature.
/The last paragraph on p. 103, p. 104, and the first paragraph on p. 105 are omitted in the translation; see the foreign text. Page 105 continues as follows./

[136] Continuously accompanied by the monotonous cries of
the falcons, which nest on the rocks in great numbers, on July 13
122 we reached the Alakít, a very important right tributary, which
133 at its mouth is practically as wide as the main river. We had
watched for it for a long time, for despite all our experiences
up to now, we had not lost all hope of finding here some traces
of activity by the Wiljuisk /Vilyuisk/ authorities in the interests
of our expedition. The Alakít is most easy to reach from
Wiljuisk. Moreover we had heard from our old guide who led
us to the Olenék that Jakuten /Yakut/ resided throughout the
year not far from the Alakit mouth. But again all our hopes
were in vain. Although we stayed almost 24 hours, we only
succeeded in establishing, just as formerly, that people had
been here -- but that did not do us any good. In addition
preliminary calculations from my observations showed that
during the river journey we had advanced about 126 versts to
the east, to be sure, but had lost 18 versts to the south.

114 As early as the year 1854 an expedition for scholarly purposes had touched the Olenék at this place, but at an unfavorable time in October, which here is already definitely a winter month. At that time Richard Maack passed this way -- at present a member of the Council of Ministers for the Enlightenment of the Masses -- and the topographer Sondhagen, coming from the upper Ssiligír, which empties into the Olenék farther down. We knew almost nothing of their results, except for a

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/105 cont./

114 few indications, for they were not yet published. At that time the expedition, /106/ coming here from the south, touched this stretch of the Olenék and turned from the Alakít to the Wiljui /Vilyui/, the exploration of which was their real task.

122 [133] We had expected to find a greater volume of water in the river below the Aalakít, and thus less trouble from shallows, but in vain. To be sure, the Olenék increased very considerably in width and also exhibited a few deeper places, but we still every day found shallows where the river was so low that the water did not reach the knees in its whole breadth. Often Czekanowsky and I, when our vessel was stranded once again, left it on foot and, although there were often not inconsiderable stretches to be waded across, always reached the bank quite dry, thanks to our sound waterproof boots. Usually our collections benefited more or less from these compulsory excursions, but in any case it was a very doubtful benefit, which could not cover by far the damage which they had to suffer because of our arriving too late in the northernmost regions beyond the timber line.

122 123 On July 19, when we already imagined the Ssiligír in the valley becoming visible from afar, our raft was stranded for almost six hours in broad shallows extending across the whole river, and naturally, after it was finally floating, the men, who during the whole time had waded barefoot in the water and lifted and pulled the raft with poles and ropes, were so exhausted that to go [227] on was unthinkable. Nevertheless, immediately after we landed, the cry of geese on the nearby small lake aroused our Tungus' delight in hunting. Equipped with the light bark boat, our two double-barreled guns, and Golé moreover with his favorite weapon, the trident, and /107/ followed by our faithful dog, Waltusch, who went goose hunting with a very special passion, they ran toward the lake; when Czekanowsky and I, hurrying after them, reached it, several shots had already been made, Golé speared the diving geese with the trident, and Waltusch occupied himself with swimming back and forth in delirious excitement and bringing the slain geese to land,

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/107 cont./
122 for the ones living by means of continually diving under knew
123 how to escape him and he therefore had to give up this amusement
[223] after many fruitless attempts. In a very short time four old and
three young geese were slain; the others had escaped, and it was
not worthwhile to pursue them, for, once made timid, they
[226] are very difficult to bring in. Our kitchen was now very
abundantly supplied, especially since Golé also provided us
[136] from time to time with excellent taiméne /taimen/ (a species
of salmon), which he likewise speared. They seem to be very
common here, especially in the shallows, and Golé was most
eager for them, for they are seldom found in the Tunguska. For
a few days he had little success, probably because his trident
was too small for the large animals (they weighed up to
several poods).

He accompanied every unsuccessful attempt with a violent
curse, and I had to laugh once when I saw him engaged in fishing
in the distance and asked the other Tungus whether Golé
had probably already caught something, the answer was: "Probably,
192 at least he has not spoken." The Tungus, at least according
to their assertions, have no words of invective in their
language, not even any expression for invective or curses, but
use as a substitute on all occasions, particularly in handling
the reindeer, the well-known, not exactly decorous, favorite
expression of the Russians in every possible variation.

122 /108/ With few changes, every day now brought us the same
133 thing: hunting or fishing with more or less abundant booty
(taiméne weighing up to 16 pounds) and being stranded in the
shallows. Our position was very serious. From July 19 to 23
we covered a stretch of 15 versts at most, not once in a straight
line, but with all the bends of the river. A superficial reckoning
showed that we could only reach the mouth, whose position
was to some extent known to us, or at least its vicinity, if we
henceforth covered at least 20 versts a day, and even then only
with the very improbable assumption that from here on the river
made no considerable bends, which, however, it had exhibited
continuously up to now. Up to the Lena we had 500 versts in a
straight line and nearly as far to Wiljuisk. It therefore also

Tungus RU5

/108 cont./

122 appeared very dark with regard to an eventual retreat. The
133 [132] mouth of the Olenék, as Chitrów (1) says, often freezes over in the first days of September, and we therefore had to arrive there earlier, before the river carried ice, with which a raft journey is impossible.

122 Only two things could help us, meeting people or heavier rain and the resulting rise of the water and speeding up of the current. In the former case it would be possible, to begin with, to repair and in part to renew our rafts, whose timbers had already soaked up all too much water and as a consequence traveled very low; we would have been able to count on a few workers, who /109/ would have assisted us by pulling or pushing us forward in places with less current, but in particular we hoped to be able to buy reindeer, in order, in the almost unavoidable case that the season of the year might put an end to our further travels by water, to reach with our baggage either the mouth or at least some inhabited region. Unfortunately there was no
161 prospect of that. It almost seemed, as earlier on the Syrúngna
764 and Jakóngna, as though the whole population were extinct.
If up to the Alakit mouth we had already frequently found burials where, according to the old custom, the corpses were put in boxes on piles or simply hung in trees, below the Alakit we found an even greater number of them, often very carefully made and provided with a high cross. At one place there
[487] were 11 graves together, a graveyard, as it were. In the vicinity we also found a wide road obviously traveled for a very long time, on which, as we believed, a missionary annually went from Wiljuisk /Vilyuisk/ to Lake Dshésse and back. Even though generally people would have to be found in the vicinity of this regularly used road -- they were not present.

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[114] 1. Chitrów (at present Dionýssij, Bishop of Jakutsk /Yakutsk/, description of the Shigánsker Ulússes /Zhigansk ulus/ (in the Russian language in the publications of the Siberian Section of the Imperial Geographical Society).

Tungus RU5

/109 cont./

122 Thus, there remained only the hope for rain, and this did not
132 disappoint us. For several successive days the sky was heavily
133 overcast and rain fell from time to time, but always very insignificantly; finally on July 22 it began to rain heavily, we had to stop in order not to get our things too badly soaked, and we noticed to our great joy that the water began to rise, even though slowly. When we broke camp on the twenty-third, it had risen perhaps a few inches in all, but this was already enough to make the current stronger and to carry us over the shallows, still very numerous, without too much difficulty. We were now covering, with steadily rising /110/ water, about 15-20 versts a day, unfortunately still with very considerable bends of the river.

133 The region was also more picturesque. If formerly we had had pretty sections of cliffs here and there, now they were grander by far. Cliffs whose vertical face to the river was at least 300 feet high, with a longitudinal dimension of a verst or more, frequently occurred; one cliff in particular, at the foot of which we spent the night of the twenty-third, was distinguished by its beauty. An ice-cold brook rushed down a gorge,
[137] obviously coming from great heights; along its bank we found for the first time the yellow alpine poppy (Papaver alpinum L. var. xanthopetala Trautv.), which surprisingly we had found neither this year nor in the previous one, although it is common everywhere in East Siberia and is known even in the far north.
122 On the afternoon of the twenty-fifth, while passing a rapids, the steering oar broke, having been damaged for a long time, and there had to be a stop in order to make a new one. While our men went into the forest for this purpose, Czekanowsky and I, after a casual scrutiny of the region, busied ourselves with our tasks on the raft. Suddenly voices were heard in the distance; although I took them for bird noises in the beginning, I looked up and saw at a distance of a hundred paces two strange men who broke through the bushes. Thus, for the second time in four and a half months, inhabitants of the country.

Tungus RU5

/110 cont./

122 Just as on the Mónjero, they approached us with great caution, holding their weapons ready, and only when they were addressed in the Tungus language by our quickly summoned men did they shed their fear, take off their caps expansively, and bow deeply. They were a quite young man and a boy; behind them soon followed a graybeard with several dogs and then /111/ a whole company with two women, a few children, and a quite large herd of reindeer. They, like us, were on a trip, but in the opposite direction, on the way to Lake Syrungna, and turned out to be relatives of our former guide Dargá, who had looked for them there in vain. From the Wiljuisk /Vilyuisk/ district, where they had gone in order to make some purchases, they had come down the Ssiligír to the Olenék in the company of a Jakuten /Yakut/, had captured a hundred wild reindeer, and now planned, after the hunting was finished, to go to the Alakít, on which, going upstream, they could reach the Syrúngna by the shortest way. They made this trip every year and therefore are true nomads, in contrast to the Tungus on the Tunguska, which I, as I said above, cannot designate as such. They seem to spend the greatest part of the year, however, on the Olenék and its tributaries, where they also have a number of storage chambers in which they store their hunting booty.

R2
221
[251]

122 Since there was an adequate work force, repairs on the rafts could proceed at once. They were first unloaded on the same evening and immediately rose again to the surface of the water, under which they had lately been resting a few inches deep, so that of course we continuously stood in water and beams put under the feet could no longer help. Since taking the rafts completely apart would have taken too much time and we had to utilize the still rising water level, a third, smaller raft was made on the next day, which was immediately loaded with part of the things. Should the large rafts going deeper be stranded again, more of their load could easily be transferred to this reserve raft.

/22 We also now obtained detailed information concerning /112/
/33 the further course of the Olenék, particularly for the stretch up to the Ssiligír mouth, which the people knew well. Our old

Tungus R45

/112 cont./

122 guide from the Mónjero, to be sure, had given us a number
133 of names of rivers emptying into the Olenék up to the Ssiligír, but it now appeared that he had not kept them in sequence; moreover, we had estimated the distance from the Alakít to the Ssiligír, according to the meager information that we had from the Maack expedition, much too short. We already almost believed that we had its mouth behind us, for we had passed several very considerable river valleys on the right side, which, to be sure, carried little water or none at all, but this would not mean anything, for the main river itself looked miserable enough at this time of year, although at many places, to judge from the terraces on the banks and the debris from the flooding, it might be three versts or more wide in the spring. Now it appeared that we still had at least ten days of travel before us to the Ssiligír. After about 5-6 days we should reach the Argáchala, which emptied into the Olenék from the left side and, as it seems, is even to be regarded as the main river, since it is said to be bigger than the Olenék. Up to the Argáchala the Olenék is said to be quite difficult to travel, but from there on the current increases significantly, both in depth and speed. This was comforting news, on the whole, especially the part that from the Ssiligír on sedentary inhabitants were to be found here and there.

122 After we had purchased two young reindeer and hired one
123 of the Tungus, Nikolai, a young man of strikingly small, but powerful build and with an intelligent face, as a guide at least as far as the Argáchala, on the twenty-seventh we continued our journey, which, in view of the level of the water, now falling again but nevertheless sufficiently /113/ high, proceeded somewhat better than before. The Tungus were amazed that we had succeeded in coming so far, in view of the rather unusually low level of the water this year. Now our journey could have been called a very good one on the whole, if it had not been for the river, still always flowing in the
[133] most unbelievable windings. What good did more rapid progress do us, if, after covering 20 and more versts, we found ourselves again two or three versts from the starting point? After three days of relatively good travel I determined the elevation

Tungus RU5

/113 cont./

122 of the pole at noon on July 30 and found that we had advanced
123 barely four versts to the north, more to the east, but not any
too much either.

122 Nikolai gave us the names of very many rivers and moun-
123 tains; in connection with the smaller ones, to be sure, the
552 answer well remembered by us from our Tunguska journey was
823 also frequently advanced, gorbí ấtschin, that is, there is no
name, or he honestly said that there is probably a name, but he did not know it. Once he very proudly gave a name with the remark that it had been conferred by him and he had also told it to all of his acquaintances -- for, he added, if the ancients had the right to confer names, why not I? But there was actually nothing to object to, especially since with this right he evidently did not lead us into any misusage, as the lack of names for many small rivers shows.

122 We also now very frequently saw graves. Among others
123 we found one skeleton on which the clothing, especially the blue,
764 fur-trimmed caftan, was still quite recognizable. We at first
171 believed this to be a Cossack, perhaps from the time of
756 Jelisseí /Elisei/ Busa, who first, coming from the Lena in the
year 1636, sought out the Olenék /114/ and imposed jassak /yassak/ on its inhabitants, but soon various shaman attributes were found, and Nikolai told us that this had simultaneously been a famous shaman and a robber, who indeed must have already been dead a very long time, because Nikolai's father, a graybeard at least 90 years old, knew of him only from very old legends. We would have liked to take his skull or even the whole skeleton, which was distinguished by its smallness, but we respected the feelings of the Tungus, who obviously, despite their Christianity, had great respect for it.

122 According to Nikolai's accounts, here on the Olenék there
123 was formerly a very numerous and prosperous population, which,
173 however, has gradually died out. One family in particular was
distinguished by its wealth. In their arrogance they took the skin off a living reindeer calf and then let it go. They supposedly suffered for it, however. For three years the ghost of the skinned animal followed them; then they began to die off, and now this family has only a few representatives, one of

Tungus RU5

122 /114 cont./
123 whom is said to be living below the mouth of the Ssiligír.
174 Probably this spirit, as elsewhere in the north, was smallpox, which has contributed most to the decrease in the population.

/115/ Sixth Chapter

Saxon Switzerland in Siberia -- The Jakute /Yakut/ Ssemjón and his lost family. -- How maps are made. -- A wet night. -- Repair of the rafts. -- Berries and tea. -- Nikolai's breach of faith. -- The Argáchala. -- Meteorological data. -- More frequent meetings with natives. -- Boldonó and his affairs. -- Our guide Golé. -- The bird world. -- Poplar boats. -- The guide Ignátij. -- The maps of the Olenék. -- Needless delay. -- Without a guide again. -- Autumn mood. -- Human beings and animals at the mouth of the Hoppó.

122 133 [123] (136) During these days we went through a region which in picturesque beauty considerably surpasses the famous Elbe valley of Saxon Switzerland, about which I myself, after traveling through it once on the railroad, remember only darkness. The rock, slate-like marl throughout, forms vertical slopes toward the river up to 500 feet high and versts wide in extent, which are fissured and eroded in the most fantastic manner; the imagination can see ruins of castles, towers, bastions, or even giant heroes, as do our Tungus, who, referring to the most singular things, often laughingly call out the Russian word bogatýr (fabulous giant knight). If our raft had been a fine Elbe steamer, these rock giants would have made at least as good an impression on us as the Saxon ones, but since it was precisely at the most beautiful places that we /116/ proceeded snail-like on account of the deeper and less rapidly flowing water, and in doing so were entirely unprotected from the intensely burning sun's rays and the little flies (móschki) appearing more and more in place of the mosquitoes during the second half of July, but still vexatious, we soon had enough

T /116 cont./
122 of them and would have given a lot to be out of this romantic
133 region as quickly as possible and into the most disconsolate
136 one in the world, the tundra of the far north, beyond the timber
Y line.

122 On July 31 we met the Jakuten /Yakut/ Ssemjón, the former
123 traveling companion of our Tungus guide, who was just in the
T process of looking for reindeer that had strayed away. Hailed
Y by his friend Nikolai, he immediately came on board and for
[197] the first time we now heard the sound of the Jakut language,
which certainly did not make a favorable impression on us after the very melodious sounding Tungus language. Since his tschum /choom/ and his family were supposed to be only a short distance farther downstream, we set out again in his company. Soon he pointed to a willow thicket where his dwelling was supposed to be, and he and Nikolai tried to attract the attention of the occupants by calls -- but in vain. Even after we had landed in the vicinity and the Jakute, along with Nikolai, was sent off to seek the family, their search remained fruitless. Only a boy, a younger brother of Ssemjón, appeared; the women seemed to have run away out of fear of us, or at least it was put this way to us.

Since the place was not suitable for a camp, we went on a few versts farther and as usual had our tschum put up on the bank of the river, but several arshins above the water level. It had been raining for a few hours and we were glad to get under cover, because the rain was constantly increasing. During the night /117/ it grew worse and continued, though with interruptions, throughout the next day. We were thus forced to stay, and
Y Czekanowsky utilized the time to ask the Jakuten /Yakut/ about
[131] the region. It turned out that he lived on the Kónamka, a
river that can hardly be found on any map other than Chitrow's small one. Nevertheless, it is supposed to be one of the two main sources of the Anábara, or, as it is called here, the
T Anábar, which is noted on all maps, albeit in very different
[823] locations. Nikolai, too, drew various maps of the Olenék and
its tributaries. At first he had also tried to show the location

RV2
Tungus RU5

Y /117 cont./
122 of the rivers by means of little sticks, as these people customarily
123 do, but then he decided to take the pencil in his own
T hand and to draw a map on a fairly large scale, on which
[123] Czekanowsky then put the names according to his accounts.
/The last paragraph on p. 117, pp. 118-119, and the first
paragraph on p. 120 are omitted in the translation; see the
foreign text. Page 120 continues as follows./

T The region in which we found ourselves was of interest to
311 the Tungus because they were accustomed to get their supply of
222 tea from here. That is, there is found here in great numbers a
272 lady's-slipper (*Cypripedium guttatum* Sw.), which is very common
[137] in southern Siberia, indeed, even along the Tunguska, but
along the Olenék, so it seems, is confined to this locality.
The leaves of this plant are a good substitute for tea, which I
tried on the Tunguska and found very tasty. The natives of
Siberia are supposed to know other substitutes for tea as well,
especially Sanguisorba and Epilobium, but I myself have seen
only the above-mentioned Cypripedium used as such, and I
must say that the Tungus use such substitutes only in extreme
T emergencies, for they even completely reject the brick tea
popular everywhere among the people in the south and actually
[123] not bad. I am speaking, to be sure, of the Tungus along the
[184] Tunguska, who were so spoiled that, in spite of our admonitions,
they even threw away the tea from our pot, which had been
drawn off only once and therefore was still quite usable even
for poorer Europeans.

T
122 During our stop at this place the water reached its greatest
123 height and then began to fall again quite rapidly. On the
evening of August 5 the rafts were ready and could be loaded,
and on the next /121/ morning we were preparing to break camp
when suddenly our guide up to here, Nikolai, who earlier had
been ready to take us at least as far as the Argáchala, stated
that he would go no farther. All threats concerning the
isprawnik /ispravnik/, indeed, even the solemn reading of the
open letter given to us by the governor general, which was
translated by Sseliphon, did not make the slightest impression

RV2
Tungus RUS

T /121 cont./

122 on the obdurate Tungus. By hasty flight and deep bows from
123 a distance he escaped a few striking demonstrations that I wanted to add to the useless words as a last argument. So we had to leave him, this time without the salute shots otherwise customary. Candidly speaking, the man was completely right. The generous recompense which he expected from us, and in part had already received, was very pleasing to him, but since he was a prosperous man and moreover annually came to the Wiljuisk /Vilyuisk/ district, where he could buy the necessities, particularly powder, our gifts were much more a matter of indifference to him than, say, to our old guide from the Mónjero to the Olenék. And that this free son of the wilderness was very little concerned about the police authorities, be it the isprawnik or the elder (schúlinga) standing next to him, is probably not remarkable. To be sure, after the journey we could enter a complaint against him with the isprawnik of Wiljuisk. Apart from the fact that this latter had already behaved quite inexcusably with regard to our expedition and in any case we must first call him to account through the governor, the isprawnik can do nothing more than charge the schúlinga under whom Nikolai stands with punishing him or sending him to Wiljuisk. That would then cost our Nikolai at worst a pound of powder, a reindeer skin, or /122/ something of the kind, and in any case he would certainly not be found by the schulinga in his territory of thousands of square versts before the whole matter had long been forgotten both by us and the Wiljuisk isprawnik.

Y

[123] Instead of Nikolai, the Jakute /Yakut/ Ssemjón accompanied us, and, despite the obvious falsehood about his lost family, he did not make the slightest trouble about going with us. He surpassed Nikolai in strength, but unfortunately did not have his knowledge of the place, since he was going along the Olenék for the first time and was familiar with the river only in the region of the Ssiligír mouth. Sseliphon similarly acted as interpreter, although not as well as for the Tungus language, his mother tongue. According to Nikolai's assertion, we should reach the Argáchala at noon on the same

T /122 cont./

/22 day, but although we covered over 30 versts we did not catch
/23 sight of it on this day and did not reach it until the following afternoon. Although the Argáchala (or Argássala, for the Jakuten commonly exchange the ch and ss and, among other things, likewise commonly pronounce Ssiligír as Chiligír), which empties into the Olenék from the left, does not surpass the Olenék in size, as Nikolai had told us, nevertheless it comes very close to it. /The remainder of the last paragraph on p. 122, pp. 123-124, and the first paragraph of p. 125 are omitted in the translation; see the foreign text. Page 125 continues as follows./

T
/22 Our journey from the Argáchala on proceeded very well. Although the most recent flood, traces of which we could see in places even up to three fathoms above the present water level (those of the spring flood sometimes reached six fathoms, if not higher), had quickly ebbed again, the current remained tolerable, especially since the wind too had finally moderated and at times it even became quite calm. We covered 30-40 versts in a day by breaking camp early in the morning and, taking only a short rest for eating, going on until sundown. To be sure, that was not favorable for my observations, but what could be done! At the place where Nikolai had left us we were already beyond 68° latitude; at noon on August 9 I found 68° 24', but from there on we unfortunately again went greatly to the south, indeed almost west, so that the Ssiligír mouth, which, unfortunately, I could not identify, does not in any case lie more northerly than the last point determined by me.

We now met people several times. On the ninth we had scarcely left the place whose latitude I had determined when
Y a loud voice called to us from the bank. It was /126/ an old
/23 Jakute /Yakut/, Charlámpij, from the Wiljuisk /Vilyuisk/ district. While Czekanowsky questioned the talkative old man, who had traveled far, about the Kónamka and the Kopikaí (Popigaí on the maps), about which Ssemjón too could talk, I used the time to make a few quick observations. Then we went on and soon saw a column of smoke at a little distance

T /126 cont./
122 from the bank. From our camp, which was pitched in the
Y vicinity, we sent Ssemjón to reconnoiter, and he came back in
[437] the night with two Tungus, who, like the old Jakute, were
known to him from before. "I rarely see them," he said laconically. In view of the way of life on both sides that is probably very understandable. Soon it appeared that they had previously had a business connection with regard to a mammoth tusk and, it appeared, not to Ssemjón's advantage. They did not make a good impression in general, and, after buying a reindeer calf, we parted from them as quickly as possible. The people were from Lake Dshesse, but belonged to the Syrungna Tungus.

Y
122 On August 11 when we stopped at midday Ssemjón said
123 that we were no longer very far from the Ssiligír, below the mouth of which, on the small river Ssénjka emptying into the Olenék from the left side, Jakuten /Yakut/ were said to be settled. We had at first intended to go directly down to this river, but now learned that the settlement was three days of travel from the Ssénjka mouth, although from here, because of the previously mentioned great bends of the Olenék, was not very far, which was also confirmed by the fact that we found a well-filled storage chamber. So it was decided that Ssemjón was to hurry there and fetch the people, while we went on to the vicinity of the Ssiligír mouth. It proved to be /127/ not very near, however, for we could not reach it until sunset and therefore had to stop above it.

Y
[554] The next morning Ssemjón appeared in the company of a
[291] Jakuten /Yakut/, Nikolai Boldonó, whose appearance, though
[437] certainly not magnificent, showed that he was to be counted as one of the wealthier ones. Namely, he had on a cotton shirt and a flowered scarf around his neck, whereas all the other Tungus and Jakuten whom we had seen so far along the Olenék, even the earlier Nikolai, were dressed in leather and skins throughout, a sign that they seldom or never have an opportunity to come in contact with traders or cannot afford their
Y
[437] prices. Later we learned that the imported dabá (a cotton material usually dyed dark blue) is not too expensive, comparatively

RV2
Dolgan

/127 cont./

122 speaking, but so poor that a shirt made of it falls off the body
123 in rags after a few days. To be sure, this is defective goods
[437] from Jakutsk /Yakutsk/ or Wiljuisk /Vilyuisk/, which in this
respect is probably the last possible link in the long progression of merchandise that moves from the factories to Nishni-Nowgorod /Nizhni Novgorod/, Irbit, Tomsk, etc., steadily decreasing in quality. A reindeer which we wished to buy was not brought along, because the Jakute /Yakut/ had had a death in his family a few days before and during his attending to the burial the reindeer had gone astray. At least so he said, and he showed absolutely no desire to accompany us. Only when he saw the relatively rich presents in the form of powder, lead, flour, tea, ropes, and the like that Ssemjón received for his services did he decide to come along, at first probably with the intention of soon leaving us again after finding a substitute, whom he hoped to find somewhere in the vicinity.

122 Boldonó is not the only inhabitant of this region; /128/ on
123 the Olenék itself, above the mouth of the Ssiligír, we saw a
[342] tschum /choom/ and a large storage chamber. Its owner,
[343] Gurtschúna, likewise a Jakute /Yakut/, was not present, but
[131] had gone to the Dolgán, who, according to Middendorff's map,
are to be found from the mouth of the Anábara to the Jenisseí /Yenisei/ at Dúdino. The son of the schúlinga of this region was also supposed to be staying temporarily in the vicinity of the Ssiligír. And in fact we saw nets hung at the mouth of the Ssénjka, which probably belonged to him, but he was not to be seen, in spite of calls and shots. Ssemjón accompanied us a short distance beyond the Ssiligír, which flows into the Olenék from the right side with two branches at the junction and, after the Argáchala, is probably its most important tributary. Then he took his leave with many thanks and went back to his family, which probably was now willing to be found.

/128 cont./

122 Our present guide, although an insignificant little man
123 about 50 years old with a physiognomy by no means intelligent, is a very well-known personality among all -- probably more correctly visitors rather than inhabitants of the upper Olenék -- for the route from the Anábara to the Wiljui /Vilyui/, as well as laterally to the Lena, which is said to be used even by the [443] traders, goes by way of his settlement. Boldonó probably plays on the Olenék the same role of middleman that Uwotschán and our old Golé play on the Tunguska, and neglects his pockets just as little as those two. Unfortunately Golé and Boldonó could not communicate their trade secrets to each other, because the former understood as little of the Jakut /Yakut/ language as the latter did Tungus, and Sseliphón, the interpreter, was too young to be initiated in such important matters, especially since he had enough cunning to spoil Golé's practice after their return.

/129/ We unfortunately had daily examples, often of the most ridiculous kind, of Golé's passion to make deals, even the most petty ones. He gladly took the smallest cigar butts and in general anything that had a name, in the previous year along the Tunguska even fired percussion caps /Pistons/, the uselessness of which he must have become convinced by now after more frequent use of our guns, for he threw them away him- [443] self. Concerning the prices of reindeer, skins, and the like, upon meeting people and after he had duly inquired about them, we could never obtain an account from him, or he gave very high prices, in the hope, in case of a possible trade, of profiting from our ignorance of the Tungus language, even if it were only an extra meal, although he really had no lack of them with us. However often he practiced such deceptions, not always so petty, and was therefore reprimanded, he could not stop it, and in view of his unquestionably very great services for our expedition otherwise, there was nothing to do but to watch him and give him as little opportunity for it as possible.

Y /129 cont./

122 In another respect too the region was livelier. Countless
123 flocks of geese and gagáren (Colymbus) were startled by us.
136 The former flew up by the hundreds amid a frightful shrieking and
291 beating of wings, while the loud voices of the latter, almost
237 reminiscent of children's cries, resounded continuously through the quiet region. The gagáren, of which there are three species on the Tunguska, but we saw only two of them on the Olenék, taste oily, but are nevertheless eaten by the natives. Caps are sometimes made out of the pretty violet velvet-like down of the neck; indeed, in Turuchansk /Turukhansk/ I even succeeded in buying an overcoat, besides a cap, to be sure for the relatively very high price of 50 rubles, which /130/ were shown great approval everywhere because of their peculiar beauty. Very light and also keeping off the rain very well, this feather coat warmed one excellently, so that I can strongly recommend it, especially for ladies. In Europe where the gagáren also occur, it is said to come on the market occasionally, especially worked into muffs.

Y
122 Beside geese and gagárem; gulls were also common, but
136 only one species, with white neck and head, whereas on the Tunguska we had found several species. We more rarely saw swans, ducks, and cranes, and one bird not present along the Tunguska, called gäscha here, from afar very similar to our common stork, white with black wing tips -- probably it is a
T kind of crane, Grus leucogeranus, of which the cry is also
[825] reminiscent. Smaller birds appeared in noisy flocks, perhaps already proceeding on the homeward journey, and an owl was killed, which, it seems, is rare here, since we had seen only two specimens from the Tunguska on, while there is certainly no lack of other gangs of robbers on the rocks, in particular a
Y kind of falcon called térne by the Tungus.

122 Upon closer acquaintance our guide Boldonó thawed out
123 somewhat and related a little about the region, but obviously not all that he knew by far and, as we learned later, much that was false, deliberately however. Otherwise he was obliging and in particular supplied us daily with fresh fish, which, along with geese, which were now also frequently caught,

122 /130 cont./
123 provided almost our only food, in view of the lack of reindeer meat. In laying out the nets, Boldonó used his own boat, which held our attention because it was made out of poplar
114 wood. That is, in Middendorff (1) /131/ there is a note that
174
137 1. Sibirische Reise /Siberian Journey/,
501 Vol. IV, Part 1, No. 4, p. 572.
171
131] along the streams flowing into the Arctic Ocean west of the Olenék there are poplar boats, the material for which comes from the alluvial islands of the Olenék. Now, however, along the Olenék we had come across neither the aromatic poplar (Populus suaveolens Fisch.), which barely reaches the Tunguska (along it only one specimen was known to the population in the vicinity of Podwolótschnaja /Podvoloshnaya/ as a great rarity and this fell as an offering to science in 1873), nor the aspen (Populus tremula L.), which likewise has its arctic boundary much more to the south. To be sure, we heard that the first-named poplar occurs on some tributaries of the Olenék, indeed, even very far to the north, namely on the little Tyrachtán River, which empties into the Nákukyt River, therefore probably about 70° latitude, but it is said to be very rare everywhere and of so little thickness that it cannot be used for any kind of work. Therefore where did those poplar boats come from? Boldonó's boat came from the Lena, brought from there by his father. If Middendorff's statement does not simply rest on an error, he perhaps means the islands at the mouth of the Olenék, where possibly poplar trunks from the more easterly Siberian rivers, but not from the Olenék, might have been deposited by the sea.

122 On August 17 we saw a young reindeer on the bank and
123 soon afterward a human dwelling. A stop was made, and while I quickly made my magnetic observations, for which I now rarely found time, Boldonó went across the river and after some time appeared in the company of an oldish Jakuten /Yakut/. We had hoped to acquire in him a talkative successor to our all too silent guide, but in vain. Even less could be gotten out of

/131 cont./
122 this one; we could not even buy a reindeer from him. /132/
123 He pretended to be a poor man and to own only five of them, on which he had come here with his family; nevertheless immediately after he left us, we saw 11 fine reindeer, which accompanied us along the bank for a long time. We had already heard about the inhospitality and untrustworthiness of the people along the Olenék; now we could report on it ourselves.

Fortunately on the evening of the next day our attention was again drawn to a human habitation by a column of smoke. Soon after we had landed a little distance from it, a boat came toward us. The occupant of it, perhaps frightened because he saw me lounging on the bank with my gun, approached with his weapon held ready and called to us from a distance. Only when he was addressed in his mother tongue (Jakut /Yakut/) did
[186] he put aside the weapon and come to land. He later explained
that he had taken us for Tatars, who, according to a legend
[648] that he had heard in childhood, were supposed to be great robbers. Boldonó's attempt to whisper something in the ear of the new arrival was fortunately thwarted by Sseliphón, and so he proved to be ready to sell us a reindeer immediately, as well as, after some parleying, to accompany us as a guide on our further travels. Boldonó was kept away from our new guide, named Ignátij, as much as possible by our men, who had also become suspicious of him, and was paid off the next morning, this time certainly not generously and with a few threats on account of his bad conduct. /The last paragraph on p. 132 and pp. 133-134 are omitted in the translation; see the foreign text./

[342] /135/ On the evening of August 19 we again came in sight
of a tschum /choom/, as well as a larger herd of reindeer,
[231] probably about 50 head. Ignátij explained that this was a Jakute /Yakut/ with whom he was acquainted, Filípp Chologón, with whom in the previous spring he had hunted wild reindeer on the upper Beké, a rich man and formerly a community elder, who also knew the river well, "for he swims around on it like a gagára." In any case it would pay to make his acquaintance. We therefore, since no good landing place was to be found in his vicinity, put in a few versts below and sent Ignátij and

/135 cont./

122 Sseliphón to bring him to us early the next morning. The
123 men returned with the news that he was going to catch a couple of reindeer that we wished to buy and would soon be along. We waited for a long time, and finally he came with two miserable reindeer, for which he wanted an exorbitant price. Also he pretended to know little about the river, since he was familiar with only a rather short stretch of it. In a very bad humor over the useless stop because of him, we dismissed him and left.

The weather was good, and we therefore hoped, although it was already midday, to cover a good stretch before evening, when there appeared an obstacle that lay completely outside all our calculations. The Jakut /Yakut/ guide, who was sitting quietly by the fire and mending his clothing with a needle borrowed from our men, suddenly sprang up, uttered various puzzling sounds, and with difficulty we were finally able to learn that he had swallowed a large needle. In the most extreme mortal terror he veered about and complained of frightful pains in scarcely understandable words -- how could he be helped? Nothing more was to be seen of the needle in his throat; the butter which we immediately gave him he sputtered out again; it /136/ seemed from his statements that he had probably already swallowed the needle, but in its course it had, of course, severely injured the gullet. He expected death at any moment; in any case he was in a most serious condition, and we could not help him with the best intentions. So it was best to take him back to his people or at least to the nearest Jakuten. We quickly set about putting the sick man in the boat with a few supplies and money -- if not for him, at least for his family -- and our two Tungus took him away.

They returned in the night in the company of the Jakuten /Yakut/ Filípp. The latter, who now appeared as a relative of the sick man, obtained for his vindication a certificate to the effect that he had taken him from us in a very serious condition, gave a few signs with his finger concerning the further journey on the river, and then quickly left us. He wanted to take the sick man, who was still alive when he left, but whose throat was greatly swollen, back to his family if possible and, in

/136 cont./

122 123 case of death, to take care of the burial, as well as the family and the many herds of reindeer, which, as Ignátij had told us earlier, belonged to a rich Jakuten in the Wiljuisk /Vilyuisk/ area. Whether the poor man saw his people again we have not been able to learn. At the first leavetaking from Filípp he called after him that he was going very far and he was to tell that to his family. He was not thinking of the journey to the other world; he was at that time vigorous and healthy and was happy with us.

We were now again without a guide, provided only with the names of the most important rivers awaiting us and a few suggestions for recognizing them. /The remainder of p. 136, pp. 137-138, and the first paragraph of p. 139 are omitted in the translation; see the foreign text. Page 139 continues as follows./

As our previous guide had told us, we found the Jakuten /Yakut/ Christofór on the Hoppó River. When we saw the smoke from his hut, we cautiously landed at some distance and sent the two Tungus ahead. They learned from his wife that he would soon come. He did in fact appear before us after some time, probably only because fortunately one of the Tungus was still present upon his return. He could not sell us any reindeer at all. In order to serve us as a guide he would have to make a few arrangements at home and went back for that purpose, unfortunately without an escort. When soon afterward we sent Sseliphón after him, he had fled with his wife, "kept his name" (pominaí kak swáli), say the Russians, and we had again had a completely useless delay, for I had long ago completed my observations. There are indeed no human beings here, but rather wild reindeer (wssjo rawnó bujúny), said Golé quite furiously in his broken Russian.

122 [136] Without a guide and, what particularly annoyed us, also without fresh meat, we had to travel on. In view of our rapid journey, hunting and fishing could provide little, especially since Golé had broken his principal weapon, the trident, on a stone. Only once did we succeed in killing, out of a flock of ten ducks (Anas glocitans, called moklók on the Tunguska),

/139 cont./

122 six of them with four shots. The animals flew up after each
[136] shot and came down again a few steps away, without taking
[223] any notice of the approaching hunters. This fearlessness of the animals, which is in direct contrast to the timidity of the human beings, is probably to be explained by the fact that the Jakuten /Yakut/ /140/ do not regard it as worth the trouble to squander precious powder on bird game.

Our longing for some change of scenery was finally satisfied on August 29, in that the river, over half a verst wide, made two bends, which in a few hours of travel twice brought
[114] us around almost three-quarters of the wind rose. The topographer who had accompanied us the previous year would have been greatly enchanted by these topographical beauties (he feared that his colleagues in Irkutsk would scarcely believe that the Tunguska made such great bends), but we were certainly not, for the attainment of our journey's end was seriously endangered by these caprices of nature.

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/141/

Seventh Chapter

The Jakuten /Yakut/ become more amiable. -- The iron Jegór and his statements. -- Bad weather. -- Northern vegetation. -- Falcon hunt. -- Unreliability of the Jakut statements. -- Beyond the 70th degree of latitude. -- Onset of winter. -- Icebound. -- Concerning the winter quarters. -- Message to Bulún. -- Internal affairs of our household. -- The fauna of the Siberian north. -- Freezing of the river. -- The local reindeer. -- Further travel on foot. -- Help in need. -- The Chatýgin family. -- Sachár O'ssipowitsch Rjeschétnikow. -- A Jakut balagan.

122 On August 30, not far from the little river of Ssukána, we
123 again came in sight of a human habitation and, to be sure, one still inhabited now, as we could see by the reindeer grazing in the vicinity -- we passed old, dilapidated huts several times a day. The call of our Tungus was soon answered. First a man and then a woman came down to the

/141 cont./
122 shore, as he said, a Jakute /Yakut/ from Lake Dshésse, who
123 had married the daughter of the Jakuten /Yakut/ in residence here, Etukjúi, and lived here at the moment, while his father-in-law had undertaken a journey, probably for trade purposes. The people were very friendly and immediately sold a reindeer, although they themselves had few of them, but they could not be of further use to us. Our young host, not being from this place, did not know the region at all and, in fact, seemed to be a little dull-witted, and therefore he would not /142/ do for a guide. Later, however, we discovered that we had been completely deceived by him, that he did come from this region, indeed even held a community office, and consequently would have been obliged to guide us. /The remainder of p. 142 and the first paragraph of p. 143 are omitted in the translation; see the foreign text. Page 143 continues as follows./

On September 3 we crossed the sixty-ninth degree of latitude, not without being delayed once by a very great bend, and toward evening met first the wife of Temír Jegór, mentioned to us long ago, and then, a few versts farther on, the man him-
[325] self, engaged in fishing. Temír Jegór, that is, the iron Jegór, a very martial-sounding name, which, however, comes from the skill at making ironware, knives, palmás, and the like, commonly found among the Jakuten /Yakut/, was a very vigorous graybeard about 60 years old, as he himself said, and, of all the men whom we had met so far along the Olenék, made by far the best impression. Without long entreaties he gave very detailed statements about the further course of the river up to the mouth, where he himself had been in former times, as well as in Bulún, where the upráwa /uprava/ (government board) was to be found.

/144/ It was especially interesting to us, however, to learn that he had already known about our expedition. According to his assertions, news of it had come to Wiljuisk /Vilyuisk/ at the time of the great fasting, but the inhabitants of the Olenék who had heard about it had fled from us simply out of fear. From our own experiences this account was very creditable, and even

/144 cont./

122 the statement concerning the date when the report was re- 123 ceived in Wiljuisk agreed with its dispatch. /The remainder of p. 144, p. 145, and the first two paragraphs of p. 146 are omitted in the translation; see the foreign text. Page 146 continues as follows./

On September 7, at the mouth of the very considerable left tributary Ukikít, as Temír Jegór had prophesied, we met his older brother Nikofór, who held the position of a dessjátnik (a community office). While I made magnetic observations in spite of the bad weather, he told Czekanowsky something about the further course of the river, the places where people were to be found, and the like. In general, I must note here, the results of such inquiries are reliable to some extent only when they are made from different persons, completely /147/ independent of one another. All statements about distances are particularly unreliable; the number of days of travel is most indefinite, as we had opportunity to experience often enough. In addition there is the very common deliberate twisting of the [441] truth, especially with reference to the trade routes. Since the (443] Jakuten /Yakut/ settled here on the Olenék are all more or less middlemen between the Russian traders on the Lena and [809] the Wiljui /Vilyui/, on the one hand, and the Dolgan on the Anábara, on the other hand, it is obvious that they do not want to be seen on the maps by strangers whose intentions they do not know. Such a route passing by Temír Jegór's dwelling place led to the Dolgan.

122 133 On September 7 we passed a second considerable left tributary with an especially wide mouth, the Bírekta, and on the next day the likewise quite large Butt. The tributaries from the right side are insignificant, for here the Lena with those belonging to it already comes too close. Unfortunately we could only supply ourselves with meat from Nikofór; we could not get a guide here either, because his son had gone to look for stray reindeer, which, it seems, is one of the chief occupations of these uncivilized peoples. /The last paragraph on p. 147 and the first two paragraphs on p. 148 are omitted in the translation; see the foreign text. Page 148 continues as follows./

/148 cont./

122 123 On the same day we met another Jakuten /Yákut/, Christofór, a brother of the one living on the Nákukit. He came to our raft in his boat, after he had first become convinced by a conversation from a distance with Sseliphón that we were real men and not some trick of the devil. He liked being with us, and he /149/ soon offered to accompany us as a guide, at least to the next Jakuten /Yakut/, Ssemjón, on the river Martschimdán, which we gladly accepted, for he knew the region well and moreover was a jolly fellow. On the same evening he went on ahead in his boat to notify Ssemjón, and the next morning we were met by a whole flotilla of boats: Christofór, Ssemjón, and two other Jakuten, each in his boat, which could hardly have carried more than one person anyway. /The remainder of p. 149 and the first two paragraphs of p. 150 are omitted; see the foreign text. Page 150 continues as follows./

122 When on the next morning, as well as during the night, the wind continued to rage, indeed blew stronger and stronger, when we saw how the snow, falling in thick masses since its sudden appearance from the northeast, had already covered the solidly frozen ground in quite wintry dress, indeed, when we noted that the maximum daily temperature no longer reached the freezing point and we, like our /151/ men, only scantily protected from the icy winds, were bitterly cold, then we finally had to acknowledge that the end of our journey by water had come more quickly than we had surmised, still far from our goal. But we could not possibly remain here at this place. There was not enough firewood in the vicinity and even less material to build ourselves, until the opening of the winter route, a hut following the Jakut pattern, a so-called golomó, or even, in case we could not hunt up sufficient means of transport, a so-called ambár, a storage chamber, in order to leave the most unnecessary things in it until later.

122 123 At least we had to drag ourselves on to the next Jakuten, Stepán, who, summoned by Ssemjón, had already appeared before us. His settlement was only a few versts away on the same bank where we were, but in view of the storm, even with increased pulling power, not attainable, for an island ahead with a sand-choked branch of the river on our side forced us to cross the river in order to reach proper navigable water along the other shore. That was a critical situation.

/151 cont./

122 Fortunately the next morning the wind, even though still
123 against us, was considerably weaker. The rafts were quickly loaded and once again we advanced. Exerting all their strength, our men, helped by Ssemjón, succeeded in steering us across to the other shore. There they recovered with food and drink and warmed their frozen limbs, and then, after circumnavigating the island, we again went to the left shore just abandoned, which we reached near the mouth of the little river Hólokit -- here there was a new difficulty caused by a sandbank extending into the river in a wide curve. Czekanowsky and I went ahead on foot, /152/ while the men again laboriously pulled the raft along the shore after going around the sandbank.

A few hundred paces below Stepán's dwelling we found a suitable place for our camp at the edge of the forest. The first night we had to content ourselves with our summer dwelling, but the next day a solider tschum was erected in the style of the one used during the previous winter, but smaller and covered with different materials. Reindeer leather was not to be had here for kind words or money, although the people, according to their own statements, had had successful reindeer hunting and therefore must have had leather. They offered us a covering of fishskin, which, however, was quite torn, and probably, even in better condition, would have been suitable only for the summer. So we contented ourselves with our tent, out of which, folded double, one wall was made, while the other was put together out of some blankets and the tip covered with my old leather cloak. After the cracks at the bottom were carefully covered with frozen earth and the iron stove was properly heated within, we found ourselves organized quite comfortably and at least protected adequately from the present cold. How it would be later when the mercury froze would have to be seen. Our people likewise built themselves a warm dwelling, which was covered in particular with the birch bark brought with us in some quantity.

Now, first of all, the upráwa /uprava/ in Bulún must be notified of our arrival. Stepán was ready to forward a letter as far as his brother Jegór, who lived a day's journey downstream, on the Koíka, the latter was to hand it on to his nearest neighbor, etc., as far as Bulún. Unfortunately, however, Stepán himself

/152 cont./
122 feared that the letter might be left somewhere on the way, for
123 this /153/ was precisely the time when young and old went reindeer hunting and scarcely anyone was to be found at home. But there was no way out. We had already tried to send Ssemjón directly to Bulun, but without success. He maintained that he needed at least a month to go there (it is six long Jakut /Yakut/ days of travel) and must necessarily take his family along. Obviously he intended to mix business and pleasure, that is, to combine here messenger service with reindeer hunting. In this case we would have to wait two months for help from the upráwa and in the meantime the continuous night would come, which we obviously wanted to avoid, at least as much as possible. On the sixteenth the northeast wind blew so strongly that Stepán could not leave on the trip with his small boat; not until the next day, with the wind still quite strong, did he leave with the letter, which contained a copy of the open order signed by the governor general and the request to the upráwa to supply immediately 10-12 narten /Russ. narta, "sled"/ for the further advance of the expedition. /The remainder of p. 153, pp. 154-156, and the first paragraph of p. 157, except for the last sentence, are omitted in the translation; see the foreign text. Page 157 continues as follows./ That is, we had decided not to wait for the help from Bulún, but to push on, leaving behind part of the supplies and the collections, which could be brought to us later.

Our host, who at first only wanted to give two narten, finally raised this number to five, so that we could at least carry the most vital baggage and provisions, while we ourselves, to be sure, had to go on foot. We wanted to leave on the twenty-ninth, even though the ice was said not to be solid yet, for at first we need not pass by way of the river, but could go along the shore itself or on the shore ice. In the meantime the river froze completely on the twenty-eighth, at least near our camp, after a good freeze, which during the last night reached -19° R.

The packing of our things to be taken along and putting away those to be left behind in our host's storage chamber delayed our departure another day. To compensate for this we had the pleasure on the last evening of receiving the reliable report that our letter to the upráwa had first reached the community elder and was being forwarded by him personally to Bulún.

Y /157 cont./
122 The Jakute /Yakut/ who had received the letter from Stepán's
123 brother and sent it on to the community elder (starschiná) came
to look us up himself, undoubtedly with the completely justified
/158/ hope of a good tip. His narte too was of great help to us,
since our baggage simply could not be accommodated on five
narten, and even on six only in an emergency, and therefore
Y Golé fashioned a small hand-sled for himself.

136 I must note that the reindeer of this region were decidedly
122 smaller and weaker than those that brought us from the Tunguska
to the Olenék. The reindeer of the Tschuktschen /Chukchee/ are
still smaller, as Middendorff says. We had heard from Baron Maydell
and Dr. Neumann, who had been in Tschuktschen country a few
years ago, that it is difficult to find reindeer bucks strong enough
to carry a man, but this was not confirmed along the Tunguska, for
a considerable number of our reindeer could carry Czekanowsky and
Y me with ease, to say nothing of one of the Tungus, who are usu-
[492] ally much smaller and more slightly built. But even here on the
Olenék it might be difficult to round up suitable riding animals,
and this is probably the chief reason why the people here, as well
as in Tschuktschen country, travel almost solely on narten, while
T along the Tunguska they ride almost exclusively.

122 On the day of our departure there was still enough to do;
Stepán took possession of the well-sealed things remaining behind,
then made as many notches on a piece of wood as there were in-
dividual packages, pressed two seals on it, and then broke the wood
T together with the seals. Stepán kept one half, and we took the
Y other one with us, and Stepán was supposed to deliver the things
[186] only to the one who showed him this half. Precautionary measures
enough, but we were still somewhat concerned about the safety of
[685] the provisions in particular, for Stepán suspiciously spoke a lot
about mice, which often steal the supplies, Tungus robbers, /159/
who supposedly break into the chambers, and more of the same.
From all these little was to be feared, much more from Stepán
and his family themselves, although the latter, during the whole
time, had received enough from us and was also generously given
presents on the last day. /The remainder of p. 159 and the first
paragraph on p. 160 are omitted in the translation; see the foreign
text. Page 160 continues as follows./

/160 cont./

122 The difficulties were almost insurmountable when on the third day, already within sight of our first principal way-station, Jegór's dwelling on the mouth of the Koĺka, we had to pass a steep bank at least a verst long, at the foot of which blocks were piled high. Czekanowsky and I went over it very slowly and frequently falling, but without mishap. For the narten, however, a path first had to be made through the blocks of ice. The men worked for hours, until they finally succeeded in getting the narten, one by one, over the difficult place.

From the mouth of the Koĺka we again on the third day, October 5, reached the mouth of the Boëntschíma, our second principal way-station, in the vicinity of which lived the messenger advancing toward us, Stepán. In six days we had covered a stretch of only about 60 versts, two Jakut /Yakut/ days of travel, and moreover in very favorable weather, but that could change at any moment, for since the fourth a wind, up to now still moderate, had come up, along with snow, sometimes from the southwest, sometimes from the northwest. It was clear that we could not travel very far in this fashion, especially considering the provisions. Happily help was near.

122
123 Our tschum was not yet ready at the mouth of the Boëntschíma when a narte appeared on the ice downstream and quickly reached us. It was a Wiljuisk /Vilyuisk/ /161/ Tungus, Jegór, who at the moment lived at the Tolóbka mouth, about 30 versts from here. He had to do some business with Stepán, so he said, and went on to see him, his dwelling lying somewhat inland from the mouth of the Boëntschíma. He soon came back, however, to set out for home again and now told us that the community elder was expected back the next day, but he himself would come to meet us with reindeer. Immediately the next morning we noticed that Stepán had probably received instructions concerning us, for he appeared early with good narten and reindeer, which had to be changed here, for the ones up to now were hired only to here or at most to the Tolóbka.

As usual, Czekanowsky and I did not wait for the harnessing and packing up, but went on ahead, not far this time. We

/161 cont./

122 had scarcely covered three versts when Jegór advanced toward
123 us, along with an escort and eight fine reindeer. He had obviously, judging by the distances covered by him, slept little, if at all, during the night. Soon our men followed; since the earlier narten and their drivers had come along, a narte could be hitched up for each of us, and we went on at a fast
[492] trot, despite the still difficult road. It was noticed that the people here are accustomed to driving, whereas in the previous winter along the Tunguska it was tried for the first time.

A few versts farther the community elder, Peter Chatýgin, and another Jakute /Yakut/, Matféj Chatýgin, advanced toward us with four narten. Peter Chatýgin, alias Atschkássow, also called Morósow, a still young, handsome, strong, and tall man, made a most favorable impression from the first. He is probably the richest and most esteemed man of this region, /162/ and the office of elder has been handed down in his family already into the third generation. He had taken our letter to Ssiktjách /Siktyakh/ on the Lena, 180 (?) versts above Bulún, and sent it on from there. A merchant settled there -- the Jakuten called him Rjétschnikow -- told him that he must do everything in his power for the expedition, and all the more so since instructions could not be expected from Bulún very quickly, because the head (golowá) of the uprâwa was not present at the moment, but had gone to the mouth of the Lena.

As a result Peter Chatýgin offered to take us to the Arctic Ocean himself, with his own reindeer, which, of course, we accepted with joy. Only one circumstance disturbed this joy -- we had to give up following the course of the river, for here in its lower course too it continued to have the same character which had almost brought us to despair throughout the journey, namely, going toward its goal in the most winding way possible. On the river itself it is supposed to be 17 hard days of travel to its mouth, and moreover through a completely unpopulated region, whereas the elder undertook to get us there in about eight days. There was no choice, for if we were still to venture to hope for some results in these northern regions, especially Czekanowsky with regard to the geology, we must

/162 cont./

122 get there as soon as possible. The survey of the course of the
123 river must be given up; I might perhaps still succeed in determining astronomically the position of a few points on the main river or on its tributaries and through that gain facts for the map being drawn up according to the statements of the natives.

122 On this day we reached the dwelling of Matféj Chatýgin, already somewhat below the mouth of the Tolóbka, /163/ and decided to accompany the community elder the next day to his temporary camping place on the Kútingna, a right tributary of the Olenék, where he still had to make some preparations for the further journey. After I had succeeded in determining astronomically this end-point of the methodical survey of the Olenék, for the sky had unexpectedly cleared in the evening, we continued our journey the next morning, October 7, at first a few versts along the shore of the Olenék up to the mouth of the Kútingna, then a stretch on it, and, after that, on the shortest route over mountain and valley to the dwelling of the elder.

We were no longer far from it when the guide said that just then the merchant from Ssiktjách, whom he knew, was passing by here and was spending the night in a nearby balagan. We, of course, immediately detoured from our route in order, after so many months, to come in contact once again with an at least halfway civilized person and were overjoyed to recognize in him a man about whom we had already heard, namely, Sachár O'ssipowitsch Rjeschétnikow, who, as a Cossack non-commissioned officer, had gone along on the Tschuktschen /Chukchee/ expedition of Baron Maydell and Dr. Neumann, had then advanced with the intercession of these gentlemen, and had been transferred here, where he now occupied himself with trade and was just undertaking a trip for this purpose to the Anábara and the Popigaí. With a knowledge of the Siberian north such as few have, because of his many years of travel, he could give us various bits of good advice concerning the route that we were to take, one stretch of which coincided with his.

/163 cont./

122 In particular he urged haste, for with the disappearance of the sun at the /164/ beginning of November the most frightful snowstorms customarily set in, which are very dangerous, especially on the tundra.

Unfortunately we did not have much time to converse with him, because night had already fallen and we still had a good stretch to cover to the balagan of the elder. Sachár O'ssipowitsch made us a gift of some fresh white and rye bread and a magnificent fish (néljma), a delicacy missing for a long time; we then left him, after he had most cordially invited us to stay at his house in Ssiktjách upon our return trip, even in his absence.

In the balagan of the elder we were greeted by his wife and given the best places, next to the fire, and the elder could not be talked out of showing us and our men hospitality with fat reindeer meat and frozen milk. The people here obviously had a better way of life than our Tungus friends along the Tunguska, who were certainly not poor.

342 For the first time we found ourselves in a Jakut /Yakut/
balagan and had to admit that in severe cold it was much to be
[333] preferred to our light tschum /choom/. Such a balagan, or
[335] yurt, also called stan when it is used as a station at the same
time, and powárnja, that is, kitchen, by some travelers, is a
rectangular hut with garret-shaped, sloping side-walls and a flat
roof, made out of tree trunks, which are plastered with clay
on the outside and are thickly covered with snow in the winter.
Any cracks are carefully plugged up with moss from the inside.
[354] The windows consist of thick sheets of ice; in the middle
[352] stands a Jakut fireplace (kamelók), likewise made out of clay-
plastered logs and around this are a number of sleeping places,
that is, simple wooden chests without bottoms, which are
filled with stamped-down earth /165/ and therefore provide
neither a soft bed nor, since they extend directly to the outer
[362] wall, a warm one; there are usually six of them. To be sure,
[122] such a balagan still leaves much to be desired; in particular
the fireplace usually stands too far from the sleeping places
and during the night frightful cold comes in through the wide,

/165 cont./

342 not always closable chimney, if it is not heated--nevertheless
[362] we were pleased by the news that on our journey, especially on
[122] the return trip, we would for the most part reach balagans for
spending the night, and only now, on the first two days of travel
123] and then on the tundra, must content ourselves with the tschum,
for which, incidentally, we obtained as a loan from our host a
fine leather covering. /The remainder of the chapter, pp. 165-166, is omitted in the translation; see the foreign text./

/167/

Eighth Chapter

Travel by narten: -- The timber line. -- The parallel of the North Cape. -- The settlement of Kuladý on the Pur. -- Wolves. -- Preparations for the tundra journey. -- Popular lectures for Jakuten /Yakut/. -- Patriarchal customs. -- Purga. -- The village of Boljkalák or Ustj-Olénskoje. -- Festive reception. -- Geological data. -- Within sight of the Arctic Ocean. -- Canine concert. -- The illustrious dead of the Olenék. -- Fishing and hunting. -- Well-being of the natives. -- Exchange of gifts. -- Off for home! -- Departure from the Olenék. -- Reception in Ssiktjach.

/The remainder of p. 167, pp. 168-171, and the first paragraph of p. 172 are omitted in the translation; see the foreign text. Page 172 continues as follows./

122 Thus our trip was assured and all that remained was to provide for new, sounder narten /Russ. narta, "sled"/; these were finished in the next two days, the ones for Czekanowsky and myself even being fitted with leather kibitkas. Meanwhile we were profoundly bored during our wait of over four days. Czekanowsky had some trees cut down, measured them, and counted the annual rings. I had long finished with my magnetic and astronomical observations, having positively wrested the latter from the unfavorable weather. Thus there was nothing to do but chat with the Jakuten through the interpreter, particularly with the elder, who had caught cold traveling back and forth and therefore was now confined to his room, or rather to the yurt.

Y /172 cont./
122 I brought out my magnetic bars and angled with them, as
123 well as with my pocketknife magnetized on them, for needles
scattered on the table, to the great delight of those present,
which was made known with an abundance of extraordinary interjections,
in which these primitive peoples /173/ are able to accomplish
a great deal. The fact that they could not do the same
thing with their own knives, made of soft iron, no matter how
much I touched them with my amazing bars, seemed particularly
miraculous to them. Czekanowsky decided that if he ever
traveled through these regions again he would provide himself
with various magnetic playthings for barter.

The compass caused almost even greater astonishment when
Y they discovered that with this instrument one could find one's
821 way in the tundra even during a snow storm. Their knowledge
of astronomy does not seem to be very great; as far as was to be
understood through the interpreter, the elder knew only the
Great Bear, about which he maintained that "it moves its tail,"
but, with clear skies, experienced tundra guides are said to be
Y able to orient themselves by the stars.

571 The statements of the elder completely confirmed all the
praise that Chitrow bestowed on the inhabitants of these regions.
Y Their love of their fellow men is positively unheard of and reminds
736 one of patriarchal times and conditions. Not only do the
431 rich never abandon their poorer fellow tribesmen in case of need,
T they feed and clothe them, and if, as often happens, the reindeer
736 fall prey to wolves, they replace the loss for the ones robbed --
431 Chitrow says that a Tungus of his acquaintance was supported in
224 this way for three successive years and that such support may
amount to 30 reindeer, a sizable fortune here -- there even
prevails a custom whereby the hunting booty, especially slain
reindeer, is shared among all the companions or family members;
the pelt is given to each member in turn -- with the exception
of the fortunate hunter, who fears losing his talent for
hunting if he violates this custom held sacred by the fathers.
100 The two /174/ Tungus accompanying us made peculiar faces at

The two Tungus accompanying us made
T /174 cont./ peculiar faces at
123 this story, for such is not known in their country. They evidently considered these people terrible liars, or, if everything that they
T said were actually true, great blockheads.

Y
177 In still another respect we found Chitrow's statements confirmed. That is, he names as inhabitants of the Shigansk /Zhigansk/ district, and especially of the lower Olenék, Russians, Tungus, and Jakuten /Yakut/ and observes that the first two have been completely Jakutized, not only in clothing and customs, but also in language. So far we had met only one Tungus, who, however, actually belonged to the Wiljuisk /Vilyuisk/ district -- to be sure, he was so completely Jakutized that he no longer even understood Tungus; all the other people whom we met called themselves Jakuten. Now we learned from the elder that even his family, Chatýgin, which is now considered a true Jakut one, was originally a Tungus one, but has been Jakutized for several generations.

Y
122 On the morning of October 18 we could finally set out on our journey, unfortunately in very bad weather, for a violent southwest wind blew and at any moment the sky threatened snow,
Y which had also fallen abundantly the day before, but we could
[132] not wait any longer. We had scarcely passed the timber line about ten versts from our balagan when the wind thoroughly shook us; also it began to snow again, the purga, the snowstorm, was ready to start -- still not a wholly genuine one, to be sure. The true purga only begins, as is said here, in the black months, that is, when the sun no longer comes up. When sky and earth are no longer to be distinguished in the chaos of whirling particles of ice, when the raging storm itself is able to blow down lighter buildings, then even one of the natives rarely ventures /175/ out into the dreadful snow-wilderness threatening destruction. Today it was still bearable, especially for Czekanowsky and me, protected by our kibitkas and only sprinkled with powderings of snow on occasional windings of the route. On this day, on account of the bad weather, we covered a distance somewhat shorter than our guide had intended, but still 50-60 versts, and had to wait almost two hours until the men had put up our tschum in a river valley somewhat protected from the wind.

/175 cont./

137 The timber line now passed by us lies at 71 1/2° latitude. It is not fixed very precisely, for individual streaks of forest extend tonguelike into the tundra, and here and there one finds smaller or larger islands of forest, so that here the transition from forest to tundra, in contrast to what we saw earlier, was a very gradual one. Lone before our last camp it was noticed that the forest was becoming steadily poorer and more stunted, and from there the signs
122 of its imminent cessation multiplied. On the next day we crossed the watershed between the Pur and the Boljkalák, the last large tributary of the Olenék. Since it was no longer snowing we advanced quite rapidly, but when it became dark we had still not reached by far our camping place designated for tonight by the guide, but rather only a very small hut in the middle of the tundra, which we used to revive ourselves somewhat. Then we continued our journey in the darkness and finally reached a small, but cozily warm balagan on the little river Molokó, which empties into the Boljkalák. On the next day we followed the course of this little river and then the Boljkalák itself, but our /176/ guide, in shortening the route by cutting off the bends, multiplied its difficulties and in crossing the steep sides of the bank our narten, and we with them, frequently took a fall. Otherwise Czekanowsky
[133] was very satisfied. The rocks here decidedly no longer belonged
[134] to the Silurian formation which had become so very boring to us, for coal appeared, but unfortunately no petrifactions.

122 In the evening--it was October 20, that is, exactly four
123 months since we had reached the river system of the Olenék at
621 the Ljútscha Ongókton -- we found ourselves at the goal of our long journey, at the little village of Boljkalák lying at the mouth of the Boljkalák into the Olenék, officially Ustj-Olénskoje, i.e., mouth village of the Olenék, and stopped in front of the stately balagan of the local elder, which had been assigned to us for a
[574] dwelling. Informed previously about our imminent arrival, the entire male population -- it was an imposing crowd; we at least had not seen so many people together for a long time, but in all only seven families are said to live here -- stood ready to welcome us and greeted us with low bows as we climbed out, while upon entering the balagan we were received by the ladies of the house.

/176 cont./

entering the balagan we were received by the ladies of the house.
122 They had, of course, put on their most beautiful finery; we
123 were struck in particular by the very large silver earrings, which,
[301] by the way, are also fashionable among the wealthy Tungus women
[171] along the Tunguska and are also acquired there from the Jakuten
[177] /Yakut/. After the strenuous tundra trip we made ourselves
comfortable at the roaring fire of the fireplace, heartily glad that from here we could, with a good conscience, turn back toward the south, toward home. We had hoped to be here two months earlier -- the reader has learned with what /177/ great difficulties we had made it possible to be here now. /The remainder of p. 177, pp. 178-180, and the first paragraph of p. 181 are omitted in the translation; see the foreign text. Page 181 continues as follows./

114 Of the living scientists only one had come farther than we on the mainland of Asia -- indeed, by almost three degrees of latitude -- Middendorff at the mouth of the Taimyr. We also did not forget the dead -- the intrepid mariners, Charitón Láptew /Laptev/, Prόntschischtschew /Prontschischev/, Tscheljúskin /Chelyuskin/, and others who had trod this ground almost a century and a half before us undertook from here their daring journeys to explore the coasts of the Arctic Ocean and for the most part also paid here for their zeal with their lives. All our searchings for their graves, for remains of their dwellings, were in vain. On the rocks which Czekanowsky climbed there were in several places remains of old dwelling sites -- whether of theirs remained doubtful. Every tradition of that noble expedition paid for with such tremendous sacrifices /182/has been lost among the inhabitants (1). At that time Russian peasants probably lived

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114 1. So it in fact appeared to us, but in the following year Czekanowsky found the inhabitants of Boljkalák much more communicative. They showed him the graves of Prόntschischtschew and his courageous wife, who had followed him into this desolate place. On the last rock on the right shore of the

/182 cont./

114 Olenék, near the mouth, he found the sunken graves overgrown with moss and lichens; only a weathered wooden cross with a barely legible inscription recalls the hero to mind. Perhaps an age that has again turned its interest to a significant degree to the navigation of the Arctic Ocean will set up a worthy monument for this deserving champion at the place where he ended his heroic career.

175 At that time Russian peasants probably lived
178 here; perhaps the present inhabitants are in part descendants
[651] of the many crews that came here with those bold commanders; they still call themselves krestjáne, i.e., peasants, and their crown tax seems to be standardized accordingly, differing from that of the other Jakuten /Yakut/; in everything else they are completely Jakutized and any reminder of former times has
[829] disappeared. But they complain that they are becoming ever
[162] fewer, not, say, because of especially devastating sicknesses, but because only daughters are preponderantly born to them. I do not know whether this phenomenon also occurs among other ichthyophagists. But that is what they are in the truest sense of the word.

226 During the greater part of the year they feed themselves and
262 their dogs almost exclusively on fish. Mukssún and o'mul of
231 considerable size are the principal fish, also taiméne /taimen/ and néljma, for which, however, this was not the proper season, and therefore, instead of the anticipated delicacy, we had
226 to be content with the former, less prized fish. Otherwise only a few smaller kinds of fish are found here, but no sturgeon or sterlet, although these, as we /183/ learned on the journey, are caught, even though rarely, much farther upstream in the region of the Ssiligír. Fishing is also productive in the tundra lakes; in particular two kinds present there were brought to us, the ihúkű and the mungnúr, the latter a very tasty fish that is also quite common in the Olenék itself, where from the Ssiligír

/183 cont./

226 on it was presented to us, caught both by our men and by the natives. Perhaps it is the fish found in the lakes of the Jenisseí /Yenisei/ tundra and called mutschugór there (actually, we once heard it called that on the Olenék), which the academician Schmidt mentions from hearsay and which is very highly prized there. It has pale pink, almost white flesh, is very fat, and is barely two feet long. Along the Lena the Russians call it tschir, but it is hardly identical with the Jenessei fish of this name.

[439] Fish do not represent a trade article here, but are caught by the natives only for their needs. Fishing is said to have been 262 not particularly productive this year, but no shortage was to be seen. Our two Tungus, with the abundant fat fish set before them in every possible form, even forgot their native crucian, for which they had longed during the whole trip, and even the unheard-of happened when old Golé refused an evening meal because he could not eat any more. Raw fish in particular, frozen hard, cut in chips, and taken without any condiments, usually even without salt, is a favorite dish, which, incidentally, in Irkutsk, where it is known by the name struganína, has its devoted admirers even in higher society. I myself could not acquire a taste for it.

136 Apart from fish, however, the coast here is very unproductive. No one was able to tell us anything at all about larger sea animals. /184/ A seal was supposed to have been killed some time ago as a rarity. Polar bears do not seem to be common either and are not hunted by the natives, who rather have a great respect for 223 them. In summer there is a surplus of water birds, which are captured in great numbers, especially during the molting season. We were also told of such, about the size of a small goose, that come, not from the south, but from the north, from the sea. Since something similar is reported by almost all the travelers who have visited the Siberian shores of the Arctic Ocean, the fact 224 cannot be doubted. Wild reindeer are present in abundance -- we saw a large herd on our trip through the tundra -- and are killed in various ways, but especially with springtraps. Many hares are found in the immediate vicinity of the ocean. The arctic fox, however, constitutes the real wealth of the natives here. It is very common on the tundra and is predominantly

/184 cont./

224 caught in traps, but is also dug out of its den, as we ourselves had
[435] an opportunity to observe on our return journey. The price of a good
skin here yields on the average about a ruble, but many different
kinds are distinguished according to quality, and the poorer ones
are valued at only half a ruble; the winter pelts are, of course,
the best. The highly prized blue variety of the arctic fox seems
[651] to be practically unknown here. The crown tax as well as the
goods purchased from the merchants are paid for with the skins of the
arctic fox.

[543] Around Easter a kind of annual fair is held here, at which appear
both the inhabitants of the islands lying in front of the mouth of
the Olenék and those from the nearest settlements of the forest
region, in order /185/ to trade skins for the necessary commodities
[571] from the traders -- tobacco, tea, cloth, ironware, etc. Despite
the inhospitable climate the people here seem to be well off and
[512] very content. Even during the dark months they go about their
[132] activities out in the open, especially fishing, and only about the
time of the reappearance of the sun, around the Day of the Holy
Three Kings (sixth of January, old style), when the most frightful
snowstorms set in, do they shut themselves up completely -- often
342 for a couple of weeks -- in their dwellings. The latter are much
362 more solidly built than in the forest region, in order to offer sufficient
313 resistance against the force of the storms. The material
for building as well as for heating consists of driftwood which is
supplied by the river and even more by the ocean. Besides the
797 merchants, Boljkalák is also visited almost annually by a missionary,
who holds services in the chapel here. Chitrow praises the
devoutness of the people -- the outward signs of this did not remain
unnoticed by us either.

554 On the day after our arrival the elder (stárosta) of the
292 Kangaláss Jakuten /Yakut/ appeared with fresh reindeer for the
123 return journey. He ranked higher than both the local elder and
the one accompanying us and wore, as a mark of distinction,
a sort of uniform, a yellowish gray cloth coat with red trimming
233 and a gold-embroidered belt with a short sword. The new reindeer,
which had to be given a day of rest, and the previous ones

/185 cont./
233 that had brought us here were led a few versts farther to the right
[182] shore of the Olenek, where there was more food for them. Lack
of fodder for the reindeer is the principal reason why the inhabitants here do not keep them as draft animals, but instead use dogs,
which, because of the great quantity of fish food that they need,
are very troublesome, particularly in years when fish are not abundant.
Our host here has a /186/ splendid herd of reindeer, which, however, he keeps with friends in the forest region; aside from the
lack of food, the wolves, for which we too had to keep a nightly
watch during the trip on the tundra, and in the winter the violent
snowstorms, are a danger to the reindeer.

123 During our stay we received many presents of fish and arctic
fox skins -- probably not the best, inasmuch as it was seen that
we were not experts -- indeed, even garments that were no longer
new, which, however, we refused. The people were generously
compensated for this with tobacco, tea, sugar, ammunition, axes,
and similar articles, in spite of their protests that they did not
431 expect anything at all in return. The custom of giving and re-
571 ceiving presents during visits is widespread everywhere here, and
while it is possible that those in higher positions, especially the
local administrative officials, do not count on any return gifts,
those of the same standing not only desire, but demand them,
and it even happens, as Chitrow tells, that such mutual assurances
of esteem end in lawsuits because one party is dissatisfied.

122 On the morning of October 23 our narten stood before the door
ready for travel -- nothing held us in the north any longer; we
left the village at a rapid trot, accompanied for a stretch by
the population running alongside. We were going south, following the birds of passage that had hastened on ahead of us long
ago -- they had reached their goal long since, but we were still
far away, frightfully far! Our stations were the same as before
up to the Pur; we traveled as quickly as possible, since nothing held
[137] us any longer. Czekanowsky only took along a couple of trunks
from stunted larches, which were growing in the middle of the
tundra in the protection of river valleys; the largest was as thick
as an arm and barely ten feet tall, but of a considerable age.

/186 cont./
122 Besides these stunted /187/ trunks, however, roots of great forest
(137) trees were found here and there in the ground far beyond the
present timber line. A few such roots were pointed out to us;
they show that the timber line is receding.

On the Pur this time we were assigned a very fine balagan in
Kuladý for a dwelling, in which we rested for a day from the
exhausting trip across the tundra. On this occasion I must say
621 something about the inhabited places here. Boljkalák, like a
361 number of settlements on the Lena which we succeeded in seeing
later, can properly be designated as a village. If it does not
wholly correspond to our conceptions of such, nevertheless at
least a few huts stand together, more than one family lives there,
and the inhabitants themselves appear to be more prosperous. On
the other hand, all the other places that we encountered on our
journey are to be compared with, say, the Latvian workers in
Livonia (scattered farmsteads) -- the Russian designation here for
this is urótschischtsche. On quite a large area, which is customarily
named after a little river, a few balagans lie scattered in the
forest, often versts apart, and here, too, in Kuladý. Even the
balagan about five versts away in which we had previously stayed
not far from the Pur was, it seems, counted as belonging to
Kuladý. /The last paragraph of p. 187, p. 188, and the first
paragraph of p. 189 are omitted in the translation; see the foreign text. Page 189 continues as follows./

122 On the evening of November 1, we finally arrived safe and
123 sound in the village of Ssiktjách /Siktyakh/ on the Lena, where
we found the friendliest reception in the house of Rjeschétnikow.
Having been informed of our imminent arrival by the Cossack
long before, Mrs. Rjeschétnikow had put in order for us her only
two rooms. The building consisted essentially of a Jakut /Yakut/
yurt, but was much larger than those offered to us before, on
which two small rooms had been built; in one of the latter
there was a Russian stove, which opened up the agreeable prospect of
241 freshly baked bread. We were entertained not only with that, and
122 with fine cakes, fish, and the like; Mrs. Rjeschétnikow daily
123 showed us hospitality with splendid potatoes which she had grown

/189 cont./
122 here in Ssiktjách. Besides potatoes she also raises turnips, radishes,
123 and cabbage, but the latter no longer sets heads. In Preobrashén-
241 skoje /Preobrazhenskoye/, the last place on the Tunguska where
vegetables are grown, Mrs. Akúlow also complained about this.
Preobrashénskoje, however, lies at the 60th degree of latitude,
Ssiktjách at the 70th. The Ssiktjách potatoes were not at all
inferior to those of Preobrashénskoje and were considerably larger
than those from Turuchansk /Turukhansk/ that we had obtained
the previous year, which may be due in part to the variety, for
in Turuchansk we found round potatoes, in Ssiktjach longish ones,
[223] up to two inches long. Mrs. Rjeschétnikow also keeps some
chickens, but complained that she gets only a few eggs from
them; in part this may be due to the way the poor animals live --
they are kept in a dark cage under the stove and at most are
permitted to walk about the room; even in summer they cannot
/190/ go out in the open because of the many dogs, which are used
here as draft animals, especially for hauling wood.

122 Unfortunately, here in Ssiktjach, just like the year before in
123 Jenisseisk /Yeniseisk/, we had to undergo the experience that
the first entrance into a warm room after a long and difficult
journey is not beneficial to one's health. For several days we
felt listless and suffered from headaches, and I from a swollen
cheek as well, which scarcely made it possible for me to give
Mrs. Rjeschétnikow's cooking the attention it deserved.

And yet what great charm lay in this return from the wilderness! Even though Ssiktjách was such a remote outpost of culture and for a civilized European a wretched hole, how many long-missed enjoyments it offered us. Only someone who has been in this position himself can appreciate the pleasure that we felt when for the first time we undressed once again in a warm room, made our toilet at our ease in European fashion, and then put on the clean finer clothing that had been lying unused in our suitcases for almost a year. Perhaps a cadet who puts on the trim officer's uniform for the first time experiences something similar. How I had longed to be able to put my legs under a table again, for eating and writing on one's knees or at best on

122 /190 cont./
123
[352]
a low box, usually in a half-reclining or crouching position, is very tiring after any length of time. In the yurts of our hospitable Jakut /Yakut/ friends we had occasionally found miniature tables from one to two feet high, which were placed beside the sleeping places, but here in Ssiktjach for the first time we again sat on chairs at a table covered with a clean cloth.

/191/ Ninth Chapter

600 The Jakut /Yakut/ dignitaries. -- We exchange gifts. -- Narten of persons of rank. -- Northward again! -- Küssür. -- The upráwa /uprava/ of the Shiganskег Ulússes /Zhigansk ulus/. -- The clergyman from Bulún. -- The ivory trade. -- The population. -- Prohibition against liquor. -- Unselfishness of the upráwa. -- At the Arctic Ocean again. -- The Jakut stan. -- Astronomical observations with the mercury frozen. -- Dshejelák-Dshaná. -- Animal husbandry in the far north. -- The northern part of the Werchojansk //Verkhoyansk// district.

122
[123]
[554]
[292]
During our stay in Ssiktjách /Siktyakh/, the notables of the entire district one by one honored us with their visits -- various elders in the uniform described above, and finally a former golowá of the entire ulússes /ulus/, a dignified old man in a much more elaborate uniform than the others. His belt consisted of a broad gold braid and on it hung two swords, one an emblem of his office, the other, with pretty silver decoration on the hilt, a gift of honor from the government. We now conferred with these dignitaries about our further journey. Upon our arrival we had planned to move on, after a short rest, in a southerly direction, if possible, following the course of the Lena, directly to Jakutsk /Yakutsk/, or, if this could not be done, to travel to Wiljuisk /Vilyuisk/, and had even entertained the bold idea of skirting Jakutsk in the latter case and hastening via Oljókminsk /Olekminsk/ as quickly as possible toward the longed-for south. At first we /192/ did not at all believe the assertions of our advisors that the execution of these travel plans

/192 cont./
122 simply could not be accomplished in this season of the year, since a completely uninhabited stretch of land several hundred versts wide lies between Ssiktjach and the southern districts, which one can cross only if the necessary reindeer are distributed at various intermediate stations, but several weeks would be required for that. It was said that even the Bishop of Jakutsk on his last sojourn in the north, after a few days of travel which he made on this direct route, had been obliged to turn back and take the customary route via Bulún and Werchojansk /Verkhoyansk/.

It is understandable that we resisted as much as possible
[132] further traveling in a northerly direction. With the exception of a few hours on the afternoon of November 2 the mercury remained frozen continually, the cold increased to -37° R., and with such a temperature, which, quite apart from the darkness -- for soon the sun would disappear for a few months -- would, of course, prevent almost any observations, however hasty, we were supposed to go out again into the tundra, in the vicinity of the Arctic Ocean, whose terrible snowstorms we had hoped to escape forever. It had to be done, however, and after long hesitation we finally agreed that preparations for our passage along the route to Bulún and Werchojansk should be made, for though there are no settlements there for hundreds of versts, at least comfortable yurts for travelers exist there, and the inhabitants of the surrounding populated tracts of land are equipped to send on the post or one of the officials of this inhospitable district from time to time.

/193/ The few days of our stay in Ssiktjach passed quickly enough with the preparation of our baggage for the further journey. While we packed our collections as well as we could so that they might withstand all the perils of the enormously long journey, we tried to get rid of the other effects insofar as
123 they seemed to us in any way dispensable. There were only a
122 few things, such as shovels, axes, pickaxes, and the like, that Czekanowsky gave to our guide Atschkássow to store in case of his possible return the next year; many other things, such as our

/193 cont./
122 iron stove, which we should no longer need in the yurts, as well
123 as our supplies and kitchen utensils, we presented to our friendly
hostess, who could make good use of them. She also wanted to
keep our dog Waltusch, but we could not bear to leave our faithful
companion on two such difficult expeditions here in this climate
obviously unfavorable to him and carried out our resolve to take
him back to Irkutsk to his well-earned rest. He is now living out
the rest of his days in quiet contemplation with a butcher there.
According to the custom of the country, Mrs. Rjeschétnikow in-
sisted on giving us a present in return and provided us with some
fine fish for the trip. In addition, Czekanowsky received a
Russian-style fur cap, the crown of which was made of dark fox
[291] paws and the brim of river beaver. I was given a Jakut /Yakut/
fur hood, likewise of fox paws and lined with squirrel skins, and
a pair of huge mittens of the same kind of fur, beautifully em-
broidered at the wrists and provided with an opening through which
[171] one could put out one's hand without taking off the mitten. This
extremely practical mitten is found /194/ throughout northern
Siberia and is to be recommended to European soldiers and hunters.

493 During the cold season persons of rank here travel in com-
[484] pletely covered narten /Russ. narta, "sled"/, into which one crawls
[554] from the front and then, wrapped in soft and warm skins and
covers, sleeps through the entire journey. They are so low that
sitting up is impossible, and, of course, it is equally impossible
to see anything of the region through which one passes -- reason
enough for us to forgo this comfort and be content with our narten
used up to now, equipped only with a kibitka.

122 On the afternoon of November 5 we took cordial leave of Mrs.
[132] Rjeschétnikow and drove off in a northerly direction, with a tem-
perature of about -33° R., which during the night even dropped
to -38° R. On the way we visited the family of our guide
Atschkássow, with whom we exchanged a few presents, and on
the evening of the following day reached some yurts which bear the
name Küssür /Kyusyur/ and lie on the right shore of the river,
diagonally across from the larger village of Bulún, the chief
place on the lower Lena. We chose to stop here because our

RV2
Tungus RU5

Y /194 cont./

122 route led toward the east again, and we therefore would have had to cross the Lena twice, the width of which scarcely exceeded two versts at this point -- it would have been no easy task, because the ice cover consisted entirely of torossen (mountains of blocks of ice pushed together), so that on the earlier journey we had avoided the river itself as much as possible. The Jakuten /Yakut/, by the way, have extraordinary skill in driving the narten: in spite of the route, frightful in places, I do not remember ever having an accident when a Jakute was driving for me, while with our Tungus an accident /195/ was inevitably connected with every spot that was even only moderately bad. -- In Küssüt we found an excellent yurt consisting of several rooms and even equipped with a Russian stove, which belonged to the Ustjjansk /Ust-Yánsk/ merchant, M. J. Ssánnikow. He annually brings his supply of mammoth tusks to Jakutsk /Yakutsk/, from where he brings his wares here by water in the fall and then returns to Ustjjansk with the opening of sled travel.

T

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[493]

Scarcely had the news of our arrival spread in Bulún when more dignitaries came to visit. The secretary of the upráwa /uprava/ arrived; he had already greeted us in Ssiktjach and then returned here to wait for the golowá and to ask him for further assistance for us. His position here is certainly very difficult, because he does not understand a word of the Jakut language, while the golowá and the other elders do not understand any Russian; for the time being a former merchant who spoke both languages was helping him. The secretary brought us an official document, which, he said, referred to our expedition -- this was not the case, however; it contained orders to the effect that if the Austrian expedition under Payer and Weyprecht should reach here, they were to be shown every hospitality and helped to go on. There were absolutely no orders concerning us, but we, of course, guarded against revealing this and let the secretary believe that ours was the expedition in question. Obviously here again it was negligence on the part of the Werchojansk /Verkhoyansk/ isprawnik /ispravnik/, who had not sent the orders of the governor general here. Soon the present golowá was announced, an impressive

/195 cont./

122 man who had just returned from the Arctic Ocean. Most of the visitors appeared with gifts, of which, however, we accepted only just what we needed, for /196/ appropriate compensation, of course. One of the visitors brought a reindeer and received for it generous payment in cash, which he apparently had not counted on, for he became very embarrassed and finally explained that in this case he wished to exchange the animal given for a larger and fatter one, which, of course we could not oppose.

On the day after our arrival the clergyman from Bulún, Nikolai Ssljepzów, also visited us, and we spent a very pleasant evening with him. He told us a great deal about his travel adventures on the tundra, which he frequently had to cross. The dangers for the intrepid traveler are great -- not the least is the danger of getting lost. Once, just when his traveling companion had gone off, the clergyman was suddenly thrown out of the narte by the dogs, suddenly excited at the sight of a wolf, and he was saved only by the intelligence of the lead-dog who forced the rest of the team to circle the place of the accident closer and closer until he had again found his master and brought the dogs to a standstill near him. He would have been hopelessly lost, without any food, without a compass, hundreds of versts from any settlement. Our guest was also able to give some much desired information about the natural products of the parts of the country traversed by him, and Czekanowsky was particularly pleased by the accounts concerning several sources of petrifactions along the [136] Lena and the shore of the Arctic Ocean; the clergyman even claimed to have frequently seen ammonites, which we could show him in illustrations. Encouraged by us, he promised henceforth to collect natural products himself, as much as he could, for which we gave him a short course of instruction and asked him to send his eventual collection to the Siberian Section of /197/ the Imperial Geographical Society in Irkutsk. On the next day he sent us a young shark which he himself had caught near Bulún, that is, in the river.

632 Bulún, as I have said several times, is at present the capital [103] of an entire district, or, as one says here, ulússes /ulus/, which, however, is still named after the former capital Shigánsk /Zhigansk/. [226] On the maps the latter is even designated as a town, but it is now [439] practically abandoned. Bulún, which lies only about 120 versts

/197 cont./
632 from the Arctic Ocean, owes its present importance less to the rich
[226] fishing, which could be made useful for the more southerly regions
[439] only by the establishment of a steamship company like the one
on the Jenissei /Yenisei/, and more to the trade in arctic foxes
and in particular in mammoth tusks, which are collected here
from the entire region and then taken to the European market by
[136] way of Jakutsk /Yakutsk/ and Irkutsk. Fossil ivory is found
throughout northern Siberia, although the richest sources are supposed to be the New Siberian Islands in the Arctic Ocean, but the trip there across the frozen ocean involves great difficulties and dangers, and we were even told that the government had prohibited trading trips there after a party of ivory-seekers perished on one.

161 According to the more detailed reports gathered by
131 Czekanowsky on his second stay in Bulún, the population of the entire ulússes consists of 2,293 souls, 770 of whom are counted on the stretches of the Lena lying within the forest region, 30 in the forest region along the Olenék, while about 550 live on the timber line itself between the Lena and Anábara, and /198/ over 900 live on the tundra, and, in particular, on the islands at the
131 mouth of the Lena and the Olenék. These people, consisting of
177 Jakuten /Yakut/, or rather Jakutized Tungus, are cut off on all
sides from intercourse with other human beings by broad, barren stretches scarcely traversed by a hunter, certainly to their advantage -- I have spoken above, in the description of our sojourn in Boljkalák, of the inhabitants' purity of morals -- may it be preserved here a very long time and may more active intercourse and the cultural advance connected with it exert only a whole-
426 some influence on these upright primitive people. Up to now --
273 at least so we were assured -- the natives strictly guard against
running into debt with the merchants, and liquor, this plague advancing in the train of civilization and so corrupting for all primitive peoples, seems to be relatively not very widespread
273 here. I must mention here that the government does not permit,
or at least permits only under great limitations, the sale of spirits to the native tribes of Siberia, as well as to the workers at the gold washings, but, in view of the immense tracts of land to be

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273 supervised, is simply not in a position to carry out this measure
273 with great strictness. On the Jenissei in particular, where trade is
437 much brisker than on the Lena, great quantities of liquor are sold
441 to the indigenous tribes by the merchants; the officials, even if they actually desired to resist bribery by the traders, are only rarely in a position to stop the mischief, for even though they now and then seize a shipment of liquor, they are usually obliged to hand it over again to the owner, who insists that it is needed for himself and his own workers. The thirst of a Russian, even though it may be colossal -- the climate also brings this about -- cannot very well /199/ be lawfully curtailed if it does not lead to excess. It is certain that the Russian government does at least as much as any other government in similar circumstances -- particularly the North American and English ones -- to acquaint the original inhabitants with the good aspects of civilization and to keep the corrupting ones away from them, but profit is as dear to the Russian merchants as to the foreign ones, and liquor, as is well known, is the favorite article of trade and the most profitable one for the traders everywhere.

122 Before our departure the leaders of the district assembled
123 here gave us a demonstration of their unselfishness which cannot be appreciated enough. Our guide Atschkássow had already definitely refused to accept any kind of remuneration for the service performed for us and for the large number of reindeer that had been used for our transport for weeks; when we now began to speak of remuneration here, the golowá told us that the upráwa had unanimously decided to transport us to the border of the ulússes without any recompense whatever. At our request this decision was put in writing by the secretary and signed by all the members of the upráwa, which was done by an impression of their seals, to which the secretary added the corresponding names. These quasi coats-of-arms, any symbol, a flower, an animal, and the like, blackened with soot, were pressed on paper. We did not fail to present this official document later to the isprawnik /ispravnik/ of the Werchojansk /Verkhoyansk/ district, to which the Shigansker uluss /Zhigansk ulus/ belongs, as well as to the

/199 cont./
122 governor of Jakutsk /Yakutsk/, who immediately agreed to thank
123 the honest Jakuten /Yakut/ personnally for the help given us. To our great pleasure, our old friend /200/ Atschkássow was assigned to us as courier for the journey as far as the border of the ulússes, and he willingly accepted this decision of his colleagues, although we had already laid claim to his services for such a long time.

We were glad to be able to show our appreciation in some measure at least for the great services rendered to us here by leaving for our friendly hosts the rather considerable remainder of our powder, an article always greatly prized here, but now regarded as especially precious because the annual government shipment of powder had failed to appear this year. Atschkássow, of course, was as richly rewarded as our means allowed. My powder horn, which I believed to be no longer necessary in the continuously prevailing temperature of 30-40° R. below zero, delighted him greatly, and even more a Chinese cap which I had bought in one of the many Chinese stores in Irkutsk. The latter, to be sure, was so unique that it would have attracted attention even in Europe: that is, it consisted of two half-circles of fine brown felt lying one inside the other, which, upon being pulled apart, formed a hollow, egg-shaped body on which one could not detect the tiniest seam. I have been told that these caps, very cheap incidentally -- mine cost one ruble 20 kopecks in Irkutsk -- were made by pressing the mass of felt on a form of ice, which later melts. Any other way of making them is indeed inconceivable.

122 On the morning of November 8, we set out again in a
133 temperature of -35° R. The sun was no longer rising for us on
[32] that day, but for a long time the southern sky glowed with the most beautiful colors. First we went up the valley of the little river Ebetén, which empties into the Lena not far from Küssür and distinguishes itself unfavorably because of much Aufeis /surface ice/. One /201/ recognizes this by the blue or green color and avoids it whenever possible, for often, under a relatively thin covering of ice, one encounters large hollow spaces or even flowing

/201 cont./

122 water, the latter of which, even though not deep enough to en-
133 danger the traveler himself, can, because of the intense cold,
be a hindrance to the reindeer and, in addition, covers the
runners with a crust as hard as stone, which makes progress very
difficult. As it is, in intense cold, the runners must be freed of the
clinging ice every day before setting out. The Ebetén comes
out of the Chara-ulách Range, which, forming a branch of the
Werchojánsk /Verkhoyansk/ Range, runs a long way along the
right bank of the Lena. From Ssiktjách on we had admired its
[137] picturesque forms along the other shore of the river. Moving
up the valley of the Ebetén, we soon found ourselves on the
tundra again; only in very sheltered places did we now and again
see a few larch trunks. Probably only the high altitude has
robbed this region of forest growth, but this mountain tundra, just
like that along the shore of the Olenék, changes directly into
the sea tundra.

122 We spent the night in a balagan that was still in the Ebetén valley and on the evening of the next day, after climbing over a low pass in the Chara-ulách Range, cutting across the Chara-ulách River, and then moving down the valley of the Gōlynkaí River, again reached the vicinity of the Arctic Ocean, which forms a deep bay here. About eight or nine versts from the seacoast lies the balagan Tass-Tumúss, where the roads to Ustjjansk /Ust-Yansk/ and to Werchojansk /Verkhoyansk/ intersect. We could not have wished for more comfortable quarters. We admired the enormous beams of our dwelling, which were several feet wide -- they had evidently /202/ been carried down to the sea from the distant south by the force of the currents and then, perhaps after being tossed about for a long time, had been deposited on this inhospitable shore; indeed, who can say whether they even grew on Asiatic soil or reached here from American shores by means of some still unknown ocean current. Animated by the merrily dancing fire of the fireplace, we found pleasure in the thought that now at last we would actually be turning away from here to the south, to where -- perhaps only after many weeks -- we would see trees like those that now sheltered us from the cold breath of the Arctic Ocean. Many a traveler before us had probably indulged in similar thoughts here; the inscriptions on the

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122 walls testified to many visitors, mostly merchants from Ustjjansk and Werchojansk -- even the clergyman from Bulún was not missing.

The stations along the more traveled roads in this northernmost part of Russia, even though they are not inhabited and therefore made more hospitable, are nevertheless a great boon to the traveler. Built and maintained by the administrative board, whose members themselves use them often enough on their official journeys, in favorably located places, usually near running water, they are generally provided with a supply of wood and sometimes even ice, for there prevails here the laudable custom that everyone passing through thinks of his successor and augments the supplies as much as he can.

122 What a comfortable feeling came over me when, after
123 hours of uninterrupted travel in the frightful cold, which -- espe-
cially when it is accompanied by the wind, as more commonly
happens here in the vicinity of the ocean -- gradually penetrates
even the warmest clothing, I finally saw a shower of sparks rising
in the distance and soon glimpsed the ice windows, glowing
through the darkness like fiery eyes, of the /203/ station heated
by the Jakuten /Yakut/ who hurried on ahead. These obliging
people could not hurry out to help me out of my wrappings quickly
enough for me, but before entering the yurt I usually threw off
my outer fur coat, stiff with ice, and then busied myself at the
fire for a long time thawing out my beard, which was frozen to-
[276] gether in long icicles and often even to my clothing. Meanwhile
my bedding was brought in and thawed out a little, and finally --
what ecstasy -- I lay on my bearskin and in front of me stood the
steaming teakettle; with burning pipes -- it was impossible for
me to smoke outdoors, although at every stop the Jakuten smoked
their small pipes, which burned for only a few minutes, to be sure
(as they are used by all the peoples of East Asia, especially the
Chinese and Japanese) -- the hot tea before us, we, with Czekanowsky,
conversed for hours about the experiences of the day, and only from
time to time did I venture out to read the thermometer set up outside.

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122 Only with difficulty could I now bring myself to make astronomical observations, in spite of the stars shining most brilliantly in this magnificently clear air. The tips of my fingers were in a condition of continually losing skin and after every observation, during which I had to expose them for some time, were so frightfully painful that I -- otherwise not at all very sensitive -- once broke out in loud, nervous weeping and had to be taken back into the yurt almost forcibly by Czekanowsky. [132] The most extreme cold during which I made successful observations with a Pistor reflecting circle and mercury horizon was -33.7° R. Since mercury freezes at -32° R., I kept mine in the warm yurt for some time before the observation so that it /204/ would not stiffen too quickly outside. The little needles of ice floating in the air, which cover the instrument and particularly the artificial horizon, are the greatest annoyance during observations; therefore in the most intense cold I could only observe the moon -- the sun, of course, no longer appeared above our horizon -- inasmuch as the images of even the brightest stars were difficult to see and often disappeared at the moment of observation. My respiratory organs also suffered considerably, because I could bring the instrument near my face only by holding my breath.

122 123 The next day's journey brought us into more cordial regions again. After an eight-hour trip we reached the timber line, after we had come over a ridge into the river basin of the Omoloí (which flows into the Arctic Ocean) and thus had crossed the border of the Shigánsker Ulússes /Zhigansk ulus/. Our pleasure at having again reached the protective forest was dimmed only by the departure of our kind courier Atschkássow, who on the next day accompanied us only on the short distance to the next stan, Dshejelák-Dshaná, where we were to find new guides and [622] fresh reindeer. We found here an excellent well-heated yurt, the dwelling of one of the wealthiest Jakuten /Yakut/ of the Werchojansk district, Martin Borogón, who at the same time was the community elder and had to provide for our further journey. Unfortunately he himself was on a trip, but he had instructed his

/204 cont./
122 son Iwán to take care of any officials passing through, and we
123 were thus entertained in the most friendly manner, and on the
following day preparations were made at once for our unimpeded
further journey.

On this evening I celebrated my birthday, for which for
many weeks I had been saving a few cigars, /205/ which -- although, as I have said before, they had by no means come from
Havana -- as a pleasure missed for a long time, put us in the
jolliest mood. As of late we had had only pipe tobacco, which
we had managed to get in Ssiktjách and Bulún with great difficulty
[262] and which could hardly last as far as Werchojansk. Besides, our host had set before us a delicacy that we liked very
much, a mixture of butter and whey, called konják here. It is
made out of cow's milk and, to be sure, what interested us most,
231 here on the spot. To our great astonishment we had noticed a
few horses and cows just a few versts from our present lodgings,
which we had certainly not expected here, scarcely 30 versts
from the timber line and at a latitude of about 70°. In
Ssiktjách, located still somewhat to the south and much farther
from the timber line, Mrs. Rjeschétnikow, who otherwise, as
has been mentioned, was very successful in her acclimatization
experiments, had told us about the impossibility of raising livestock in that region, and even much farther upstream on the
Lena we were told that there were no horses, to say nothing of
cattle, which, indeed, is scarcely found at all along the Lena
beyond Jakutsk and its close surroundings.

We learned from our talkative host various details about his
livestock. It consists of about 20 horses and over 10 head of cattle.
The former were brought here by his grandfather and the present
specimens were born and raised here. They belong to a small,
but vigorous breed, have a thick pelt, and withstand the terrible
cold very well. Summer and winter, day and night, they remain out in the open, and only the foals are treated somewhat
more gently. /206/ Cattle raising, on the other hand, requires
[343] much greater effort. The stable abuts directly against the yurt
and gets its warmth from it, and also, in order not to let any cold
in, has only one door, into the yurt, which in fact brings into

/206 cont./

231 343] the latter an atmosphere not exactly very pleasing to a European, particularly when a few pet animals are brought nearer to the warm stove and therefore also nearer to the astonished traveler. The effort expended is well rewarded, however, and the cows here are praised for their abundant milk. They were acclimatized here only about eight years ago by Martin Borogón, but by no means represent, as we were inclined to assume, the extreme outposts of their breed in the north, and, on the contrary, as we were told here, cows -- not to mention horses -- are said to be raised with considerable success by the merchant Ssánnikow even in Ustj-Jansk, that is, at about 71° latitude and on the shores of the Arctic Ocean, to which the good pasture there is said to contribute the most. According to the view of our host, cattle raising would even be profitable at the mouth of the Lena, because there, too, excellent fodder is to be found -- the alpine pastures are indeed famous; why therefore should not the tundra pastures so similar to them, albeit much poorer, also be useful for dairy cattle? It could be determined by trying it. The mouth of the Lena is likewise inhabited by Jakut-speaking tribes, which, however, as I have already said, are actually of Tungus origin. Could this be the reason that, in comparison with the true Jakuten /Yakut/, which we had before us here in Dshejelák-Dshaná, they had less energy, particularly with regard to the livestock-raising brought by the Jakuten from their original southern homeland? The unsuccessful acclimatization attempts made by the Russians along the Lena may perhaps be attributed to the unfavorable location of the place -- the /207/ vicinity of Ssiktjách, for example, seems in fact to be unsuitable for raising livestock.

136 We learned a great deal more this evening about the fauna of the country. Only foxes are commonly found here, and in the neighboring tundra arctic foxes and reindeer, as well as hares and ermine. Squirrels, although of good quality, are not plentiful and therefore do not represent an article of trade; with regard to other fur-bearing animals, the sable is not found at all and the glutton only very rarely; as for beasts of prey, only an occasional wolf that comes over from the mountainous parts of the tundra; bears, on the other hand, are completely unknown. We were interested in the news that elk were found here only 15 years ago,

/*207 cont.*/

136 but since then have completely disappeared. They are therefore also retreating southward here just as along the Nishnaja /Nizhnyaya/ Tunguska. The wild sheep (*tschubukún*) found farther south in the Werchojansk Range had been heard of, but they are not found here even in the rockier parts of the tundra, although there, as well as here, marmots (*tarbagán*) are very common.

226 Our host also engaged in fishing with great success at the
439 mouth of the Omoloí, the yield of which -- *mukssún*, *o'mul*, *tschir*, and *nélima* -- except for what he uses himself, he for the most part exchanges for furs in Ustjjansk /Ust-Yansk/.

122 On the next day we continued our journey almost due south
13 and passed a very populous balagan, which was named for us as Iggitauýt, as well as several tributaries of the Great Omoloí, which lies to the east of the Little Omoloí which we had already crossed. We were told that the region abounded in swamps and lakes that were full of fish; the forest, although somewhat taller than that of the previous day, was still very poor in comparison with that found at the same latitude along the Olenék, alternating with great tundra-like plains. In general, it seems as though in the far north the /*208*/ extensive plains are not favorable for forest growth and that it remains relatively vigorous only in the more uneven terrain even up to very high latitudes. In the afternoon we reached the *stan* Dshüssál on the lake of the same name, where I decided to make some astronomical observations because of the exceptionally mild temperature of barely -20° R., according to which we were at 60° 38' latitude.

On our further travels the next morning we were surprised after a short trip along the shore of the Omoloí in the vicinity of the settlement Ojóma by a little grove of poplars (*Populus suaveolens* Fisch.). This poplar, according to the natives, reaches its northern boundary here, but has such small trunks that they are unfit for working. On the day before we had noticed many
133 willow thickets in all the river valleys that we crossed. From
122 Ojóma on a broader view of a quite considerable mountain range

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133 taking in the whole southern and part of the eastern horizon, 122 over which our route was to take us, opened up before us -- the Kullár Range, which, running in a northeasterly direction, seemingly parallel to the Chara-ulách Range, forms the watershed here between the Omoloí and the Jana /Yana/ basin. Although both the Kullár and the Chara-ulách ranges are probably only spurs of the main watershed between the Lena and the Jana, whose collective name, however, we could not discover, their appearance here is very different. Instead of the frequently picturesque, jagged, often conically-shaped peaks of the Chara-ulách, here we saw only massive rounded heights with steep [137] slopes and broad flat valleys in between. After we had traveled about five versts from the Omoloí across a completely unwooded plain, we reached the /209/ foothills rising steeply, but not high, and covered with woods, and finally, after another six to eight versts, the completely treeless heights of the mountains; in the valley of an insignificant tributary of the Omoloí, the Kylagóttu, we reached the altitude of the pass, which rises at least 1,300 feet above the Omoloí and is topped by the surrounding peaks by [136] another 400-500 feet. Here, by the way, we saw only a lower [192] part of the range, which is said to reach much greater heights in the source area of the Omoloí, which is to be seen merely from the fact that wild sheep (tschubukún) are said to be found there in abundance, while they are still absent here.

122 13 Directly after the watershed we reached an insignificant brook, Kargýchala, already belonging to the Jana basin, down whose broad valley, running southwest, we soon reached the little river Tass-Apká and the stan of the same name, which was to serve as our lodging for the night. The southern slope of the Kullár Range is considerably less steep than the northern slope; on the other hand, the tree vegetation on the latter is more vigorous and goes up farther, probably likewise evidence that the climate becomes milder toward the shores of the Arctic Ocean, which was also shown by a comparison of the temperature observations in Ustjjansk /Ust-Yansk/ and Werchojansk /Verkhoyansk/, as well as the completely unanimous statements of the natives.

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880 as well as the completely unanimous statements of the natives.

122 Our further journey, always in a southwesterly direction,
went down the valley of the Tass-Apká to where it empties into
the Bytantaí River, where the region was already beginning to
[132] become more populous. Everywhere we noted traces of human
activity, fences and great haystacks; horses and cows roamed
about in the open in spite of the snow falling heavily and the
[137] prevailing temperature of about -25° R. The woods also began
to look more imposing and we were especially pleased to see
along the river banks /210/ now and then quite stately, straight,
and thickly-branched trees, not seen for a long time. Unfortunately
we were quite unexpectedly delayed here. In the stan Tass-Tumssá,
which we reached soon after midday, the station manager, or
rather his substitute, absolutely refused to grant us the necessary
reindeer for our further journey, and he could not be induced to
yield either by our official documents and threats that we would
have him punished by the isprawnik /ispravnik/ or by the remonstrances
of a Jakuten /Yakut/ elder who happened to be present.
The latter, since he did not reside here, could only put his own
two reindeer at our disposal, and thus it would have been difficult
for us to do anything but turn for help to the authorities at
Werchojansk /Verkhoyansk/, by which we would have lost several
days at least, had not our guide up to here, Iwan Borogón, been
kind enough to undertake our further advance to Werchojansk with
his own reindeer.

122 On the next day we crossed a mountainous region and climbed
133 three ridges, Kuwaláss, Idomopút, and Kyrá, the middle one
of which was quite insignificant, while the two others also seemed
to rise only about 700 feet above the last night's lodging, and spent
the night in the stan Tykák on the river of the same name, in the
valley of which we covered the greatest part of the next day's
journey and in doing so, in order to cut off the many bends,
traveled sometimes on the one bank, sometimes on the other.
[132] After climbing a ridge, Koptolák, rising about 1,000 feet over
the immediate surroundings, we stopped at the stan of the same
name, where toward the morning of November 17 I again noted

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132 a minimum temperature of -37.0° R., at which the mercury in a little bottle that stood beside the thermometer was solidly frozen; since November 5, when /211/ in the vicinity of Saiktjách the minimum was -38° R., it had become milder, and in the night from November 11 to 12 in Dshejelák-Dshaná in the vicinity of the timber line I had even noted a minimum of only -18.7° R., and at 7:00 on the morning of the twelfth, only -14.5° R., but then it became colder again. When toward midnight I stepped outside the door of the yurt, I also had the opportunity to see a shining meteor moving in a long, fiery path through the stars shining most brilliantly in the intense cold.

122 The next day, November 17, brought us at last to another principal point of our journey, the district town of Werchojansk /Verkhoyansk/, which we reached at an early hour. It lies in the valley of the Jana /Yana/, into which we quickly descended down a fairly steep slope of about 900-1,000 feet from the nearest heights and then drove a while on the river itself.

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Tenth Chapter

100 Werchojansk /Verkhoyansk/. -- N. S. Goróchow. -- The world's cold pole. -- The isprawnik /ispravnik/. -- Increase in the post tax. -- Antediluvian animal carcasses. -- Garden cultivation. -- Difficulties of the journey. -- Skoptsў. -- Northern lights. -- Arctic boundaries of some forest trees. -- Adventure on the Jana /Yana/. -- M. P. Bereshnow and his caravan. -- Silver ore -- Crossing the Werchojansk /Verkhoyansk/ Range. -- Cold quarters for the night.

122 361 We had not had too high an idea of Werchojansk /Verkhoyansk/, for we had already been very surprised in Turúchansk /Turukhansk/ to find not a single true street such as even the smallest villages located somewhat more to the south exhibit, but rather only individual houses, with quagmires and puddles in between; nevertheless Werchojansk now fell behind even our already very modest expectations. To be sure, it looked cleaner than Turúchansk, for everything was covered with deep snow, but the place was even

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122 361 smaller than we had thought -- the church with the house of the clergyman, the building for the isprawnik /ispravnik/, then the pride of Werchojansk -- the two-story house of the merchant Nikíta Ssemjónowitsch Goróchow -- two or three other houses and several yurts, very scattered, and that was all.

122 123 Nevertheless we were heartily glad that we were here and were most pleasantly surprised by the friendly reception in the house of Mr. Goróchow. The present master of the house was still a young man /213/ barely 30 years old and, as was soon shown, relatively highly cultivated; he had Petersburg newspapers, played the violin, and busied himself with photography. We obtained from him quite a good photographic view of Werchojansk. He obviously belonged, so to speak, among the patricians of this town, if he is not the only one of this type, for the few other men who were visible more in the background during our reception were not introduced and seemed to be dii minorum gentium.

122 In those places in Russia, and particularly in Siberia, where there are no guesthouses, therefore in practically all of them, with the exception of the largest towns along the important roads to Moscow, there are available for travelers who pass through on orders from the government temporary lodgings which, for the most part -- of course, only according to local conceptions -- are furnished quite respectably and usually belong to the more highly esteemed inhabitants. One pays nothing here in rent, but, on the other hand, does pay for service and, of course, for food and drink. Here in Werchojansk it was different, for the Goróchow family, for several generations, would not be deprived of entertaining distinguished travelers -- free of charge, of course -- by themselves. Thus a few years before us Baron Maydell and Dr. Neumann rested here on their journey to the Tschuktschen /Chukchee/ country and back from there; indeed, almost 50 years before us Baron Wrangell /Wrangel/ stayed with a forefather of our friendly host, who, however, in Wrangell's travel account (in the Russian edition) is erroneously called Doróchow.

/213 cont./

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132
Werchojansk, although, as I have just said, scarcely deserving the name of village, much less that of town, has nevertheless become well known in the most distant lands, at least to scholars, for, as has been /214/ proved, it is the coldest point on the whole surface of the earth. /The remainder of p. 214, p. 215, and the first two paragraphs of p. 216 are omitted in the translation; see the foreign text. Page 216 continues as follows./

122 In Werchojansk our first interest was the isprawnik, who was to provide for our further journey, but, above all, had to give us an explanation as to why up to this point he had simply done nothing for the expedition. Only the great kindness of the Jakuten /Yakut/ had made it /217/ possible for us to reach Werchojansk; otherwise we would have been in the sad plight of having to winter somewhere in the far north, with our supplies almost entirely exhausted and only very little money, for we could not have counted on help directly from Jakutsk /Yakutsk/ before the next spring. I prefer to omit the name of this noble individual here, for unfortunately I cannot report anything good about him. The governor's orders, to do everything possible in the interests of our expedition, but especially to make arrangements for our unimpeded return journey as soon as we appeared at any point along the Lena -- he had had these orders as early as May, but had simply disregarded them, because, as he very naïvely explained, he did not know what he should do. Even the very obvious thought of notifying the Jakut officials along our route had not occurred to him.

I soon found an explanation for this quite incredible indolence: namely, the good man is supposed to be very addicted to the vice of drink in the well-known Siberian form -- which, incidentally, also occurs here and there in Europe -- sapoí. Those addicted to it drink only periodically, but then in such a way that they are incapable of anything for some time -- the duration of the attack varies from a few days to months and similarly the sober periods are very different, according to the severity of the malady. A characteristic of this sickness, for that is indeed the most accurate designation for it, is the frightful

122 /217 cont./
repugnance against all spirits during the intervals. If a true Siberian at a reception -- and, according to the custom of the country this takes place in connection with every visit in the form of a so-called sakússka, i.e., a variety of spirits along with the necessary spiciest possible morsels to bite on (the direct translation of sakússka) /218/ -- does not accept the customary grain spirits (otschísch-tschennoje, i.e., purified, sc. whisky), but excuses himself in embarrassment, the chances are at least ten to one that he is a victim of sapoí. The drinking of spirits in itself, even within limits that somewhat exceed those customary in Europe, does not seem to be harmful in any way here, but rather to be strengthening, particularly for Europeans and their descendants. The fact is, as I can testify from my own experience and that of many of my European acquaintances, that the intoxicating effect of spirits is much weaker in Siberia than in Europe. Czekánowsky and I were emaciated during the Olenék expedition, on which we had to get along without any alcoholic beverages at all for about half a year, but with quite adequate nourishment
273 on the whole otherwise. Liquor certainly does not, however,
171 have this beneficial influence on the indigenous tribes and has a very intoxicating effect on them. I do not know whether the substitutes used in its place by the various Siberian peoples have more beneficial effects. The Burjaten /Buryat/ in southern Siberia get drunk on tarassún, a milk liquor with a most horrible taste; the Tschuktschen /Chukchee/, on a decoction of fly agaric; the Jakuten /Yakut/ even on enormous quantities of butter which they devour in a liquid state by the pood (pood = 40 pounds) and thus put themselves into a drunken-like stupor. /The last paragraph on p. 218, pp. 219-229, and the first paragraph on p. 230 are omitted in the translation; see the foreign text. Page 230 continues as follows./

122 On the next day /December 1/ we reached the last station,
133 Kõng-urách, before the watershed of the Werchojansk /Verkhoyansk/ Range. The mountains came ever closer to our route, but the ascent was so gradual that without watching the barometer we could scarcely have imagined that we were ascending a high range and
600 would soon be at the height of the pass. At this station we met the

51: Müller--130 N-2 (1873-1875) 1882 RV2 Yakut RV2

Historical Siberia RR2

HS /230 cont./ At this station we met the
439 Kolýmsk merchant, Michaïl Páwlowitsch Bereshnów, with his
484 whole caravan, a very interesting encounter for us. These
merchants spend part of the year, usually from July to the end
472 of October in Jakutsk /Yakutsk/, where they buy all their supplies, European and colonial goods, flour, and in general everything that is needed in Kolýmsk but is not to be had there, in order then, with the opening up of the winter route, /231/ to transport all these commodities to Kolýmsk. They use pack horses exclusively for this and also ride themselves; the richer merchants have 100-200 heavily laden animals with them, all of the previously described sturdy breed covered with thick hair, which defies the climate here. Since the few settlements and official post stations could not, of course, readily provide the fodder required for such a number of horses, these traders, who for the most part go back and forth over the route annually throughout their lives, have depots all along the way, which are supplied with the necessary hay by the natives living nearby. Despite the cold, which is frightful for a European, these trips go on in winter, because the route is easier then and, if I am not mistaken, is also
HS shorter than in summer, for the many swamps and basins of water,
[132] being frozen, present no hindrance; nevertheless the trips take months, with a temperature of -30° to 40° R., and sometimes even more. All these merchants are more or less well-to-do, many very rich, even according to European conceptions -- they also transport mammoth tusks and furs from the north to Jakutsk /Yakutsk/, which likewise bring them rich profits -- nevertheless these trips are an absolute necessity for them, one which they would be as loath to do without as, say, a European capitalist his
Y annual trip to a watering place -- de gustibus non disputandum est.
135 We learned a number of things here concerning the range on which we found ourselves, which unfortunately the season of the year prevented us from investigating in more detail. What mineral treasures might lie here and whether they could ever be brought out is a question for the future. Very rich silver ores are also found here, about 30 versts from our route, which, however,

/231 cont./

135 are practically unexploited, at most in a primitive fashion and only occasionally by one or /232/ another of the Jakuten /Yakut/. A Russian mining engineer is said to have explored the region years ago and reported that mining would not pay, because the ore deposits lie in a waterless and woodless region. That would hardly be an obstacle in America.

122
[369] At the cozy fire of the Jakut fireplace we enjoyed the hospitality of Mr. Bereshnów and his traveling companions, who hastened to serve us all kinds of things that we had not seen for many a long day -- they had come from the capital, Jakutsk /Yakutsk/, which among the inhabitants of the Jakuten country plays just such a role as St. Petersburg or Moscow does for European Russians. It is simply the ideal of the greatest possible comfort, fashion, and culture. We were able to express our gratitude only by presenting some articles from our traveling household that we could now dispense with, particularly some enameled iron plates, which were still unknown to the gentlemen and aroused their great admiration as being most practical. /The last paragraph of p. 232 and pp. 233-236 are omitted in the translation; see the foreign text./

/237/

Eleventh Chapter

020 Northern virgin forest. -- Water flowing with the mercury frozen. -- G. F. Ssolowjów. -- Smallpox epidemic. -- Jakut /Yakut/ post station. -- Arrival in Jakutsk /Yakutsk/. -- The governor. -- Bishop Dionýssij. -- The trade of Jakutsk. -- Furs. -- The climate and agriculture. -- History of same and statistical data. -- The classic Progymnasium and other points of interest. -- Industry of the Jakuten /Yakut/. -- Return journey.

122
137 We left our comfortable night's lodging as early as possible on the morning of December 3. The route led us down the valley of the Tukulána through a magnificent forest, more beautiful than any we had ever seen. The eye of the traveler coming from the north is delighted here for the first time by enormously high and

/237 cont./

137 thick trees, standing magnificently tall and close together, with rich and varied undergrowth. Almost all types of Siberian timber appear here together and in such beautiful specimens that one can scarcely believe that they are standing at their arctic boundary -- first the white birch in whole stands of the most beautiful trees, then the mountain ash (Sorbus aucuparia) with its beautiful red berries, which the snow had not yet knocked off, also the black alder (Prunus padus), and the fir (Pinus abies), the latter at first in individual specimens, then in quite magnificent groups, and then, of course, all the other /238/ types of timber found farther to the north -- larch, willow, poplar, aspen, dwarf cedar, as vigorous here as in the distant south. We missed only one forest tree -- the Scotch pine (Pinus sylvestris), but we greeted even it on the following day.

122 133 Wherever the dense forest occasionally permitted us a view, we saw on either side of the valley high, wild, jagged mountains of exactly the same character as those of the watershed crossed by us. On the previous evening it had seemed to me more than once as though a murmur like that of flowing water was to be heard under the stones over which we climbed, but in the uncertain moonlight none was to be found; today in the daylight, however, we saw it quite plainly and were glad to have escaped the danger of falling into the water in the dark and then undoubtedly freezing our feet. Middendorff in his work speaks a good deal about this peculiar phenomenon which is closely related to the Aufeisbildungen /surface ice formations/; nevertheless a truly satisfactory explanation cannot yet be given. Water flowing for quite long distances at close to -40° R. is certainly difficult to explain, even though one thinks of hot springs, which do come into it. Only very detailed local observations in all seasons of the year, which, of course, the naturalist passing through cannot undertake, make it possible to solve such puzzles.

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122 After a seven-hour trip -- the distance could at most amount
136 to 45 versts - - we reached the station of Bodogóle, where the inhabitants
told us something about the hunting here. Concerning
big game here, there is first of all the common mountain sheep
[321] (tschubukún), whose meat is said to be very tasty. The skin is
also highly valued and carved work is made out of the horns;
/239/ we saw only a few small spoons very simply worked. The
elk is found everywhere; on the other hand there are hardly any
beasts of prey at all, at least no wolves, which are found only to
the north from the mountains to Kõng-urách, but then are completely
absent as far as Jakutsk /Yakutsk/; the glutton, whose
pelt is eagerly sought by the Jakuten /Yakut/ for fur caps, is
found only very rarely; as for fur-bearing animals, there are many
squirrels (also flying and striped ones) and ermine, and, it seems,
sable.

122 Below the station of Bodogóle the mountains west of the
[133] route become lower and eminences covered with forest appear.
To be sure, on the right bank of the river Antimirdjách one again
sees barren peaks, but they soon recede and the range then disappears
altogether. Once again on this day, at the end of a very
wretched trip, we had to resort to a log house built in exactly the
same style as the one of two days before. The local name for these
houses is powárnja, i.e., kitchen. Although this powárnja had
been built only a few months ago, it was almost of even less use
than the earlier one, and again we had to sleep in our traveling
clothes. Fortunately it was for the last time, for the day's trip of
December 5 brought us to the station of Tánda, which lies on the
left bank of the Aldán, and from here on a more densely populated
439 region begins. Before we reached Tánda we met the Jakutsk
484 merchant Gawriíl Feofánow Ssolowjów with his entire caravan, who
likewise carries on trade with Kolýmsk, although not directly,
but rather by way of the settlement Rússkoje Ustje (i.e., Russian
river-mouth) on the Indigírka. We were interested to learn from
him -- we had stopped at a yurt along the way -- that he had
formerly sent regularly organized expeditions to the New Siberian
Islands, which had brought back to him rich booty in mammoth
tusks. He had /240/ not undertaken any for many years because

/240 cont./

439 484 of the great dangers of the trip, but now he was considering it again, for he rightly assumed that in the course of the years a great deal of fossil ivory must have been washed out there again. He also expressed to us his willingness, in case the Imperial Geographical Society planned a journey of exploration to those islands, to support it whole-heartedly and perhaps even accompany it himself, but in any case he would furnish dogs and guides.

122 After we crossed the Aldán, which has quite low banks here, quite late in the evening because of the stop, we reached the station after two more versts, from which we could not depart until after noon on the next day because we had to give our reindeer a rest. In spite of this they were so exhausted that the Jakuten /Yakut/ had to walk alongside during the whole trip, and only with difficulty by means of a six-hour journey were we able to drag ourselves to the next station, Katyngnátskije, scarcely 30 versts away. It was certainly not a brilliant conclusion to our long reindeer journey. From here on to Jakutsk /Yakutsk/ we were to be transported by horses, but great difficulties arose as a result of the lack of suitable vehicles, for here for the most part one only travels by riding. After long deliberation the Jakuten /Yakut/ finally agreed to hitch a horse in front of each narte, and thus on December 7 at about 9:00 in the morning we were able to set out again. 122 731 The horses took us on somewhat faster than the exhausted reindeer, but that did not help us much. Obviously the post arrangements were still in their infancy here, but that was the least of it -- in an emergency help could have been requested from the governor through a messenger, for we were still only about 150 versts from Jakutsk -- the specter of a terrible /241/ smallpox epidemic loomed before us. Dark rumors about it had already reached us -- they still fell short of the reality. Everywhere along our way and in almost all the stations the stricken and dead were said to be lying about, but we nevertheless had to go in, because a journey with the mercury frozen is impossible, in spite of the warmest clothing, without occasionally getting warm.

/241 cont./

122 731 At the very next station, Toraískij, which we reached at 1:00 in the afternoon, we were obliged to halt. The manageress complained to us that her husband had left the day before to get horses, and she was very afraid that since he had been gone so long he had fallen ill with smallpox. Unfortunately here, too, our Cossack proved utterly useless. Even though the Cossack's uniform is generally greatly respected, our unfortunate companion never succeeded in arousing anything but laughter whenever he was supposed to show his authority, because he could not hide his ineptitude. We had sent him ahead with an interpreter and our papers to the next station, Karagát-erdün, where a Jakut /Yakut/ authority -- the Borogónskaja upráwa /uprava/ -- was to be found, in order to have horses sent from there, but he did not come back at all, and we therefore started out the next morning without him, since we had succeeded in rounding up a few horses. We met him on the way -- he brought the almost self-evident news that he had accomplished nothing. From this station on our journey finally proceeded without any particular obstacles. At every station, to be sure, we heard about the smallpox and the sick, who were said to be present in the closest
342 proximity, but we did not see any. All the conditions for a rapid
731 spread of the epidemic through contagion certainly existed in the frightfully stuffy air of the yurts, filled with mephitic vapors. Since the /242/ livestock is very often found in the same rooms in which people are quartered, the air is so poisoned that anyone entering from the pure winter air actually loses his breath, and he needs some time to become accustomed to it. I remember when I once entered a station and, half stupified by this atmosphere and with my glasses badly dimmed, abruptly collided with a post nag, which seemed very much surprised that I begrudged him his favorite place near the fireplace.

122 At the following stations of Jeljegnjátskie, Kamesták, and Makárinskij, we stopped for only a short time, an hour at most, and traveled through the night, thus reaching the last station before Jakutsk -- Karjalákskij -- at 2:00 on the afternoon of December 9. From here we first of all dispatched the Cossack

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122 to inform the chief of police of Jakutsk of our arrival and to request assignment to temporary quarters; we ourselves followed an hour later. After we had crossed the very broad river -- if I am not mistaken, the Lena is supposed to be eight or nine versts wide here; this is difficult to estimate in winter because we did not cross in a straight line -- we approached Jakutsk and finally stopped in front of police headquarters, where we were expected and were immediately led to our quarters. Our hope that the Cossack would be more useful here in civilized conditions than in the wilderness was not fulfilled. Most delighted that he had luckily saved his own skin, he had rushed up to the chief of police with the cry, "We have arrived," and since the latter, after long questioning, could not make out who this "we" actually might be, he was about to be thrown out when he finally remembered the papers, from /243/ which the chief of police then learned of the arrival of our expedition, long and impatiently awaited.

The dwelling assigned to us left nothing to be desired with regard to comfort -- the large drawing room contained divans and armchairs, which were covered with red velvet; two Cossacks were assigned to us the next day, in order to do all the necessary shopping for us and to serve us as guides in the city. Immediately after our arrival the chief of police paid us a visit in order to welcome us in the name of the governor and to inquire about our wants. Our immediate wish was for a thorough cleansing -- we really looked very wild. All that was to be taken care of the next day, a bathing place heated for us and a barber found. The latter was the most difficult, for there were only one or two barbers in the entire city, who had other occupations besides and therefore were only rarely available.

Since our Cossack had not done what we had asked him to do, but the new attendants had not yet arrived, I set out myself to buy some things to celebrate our safe arrival. The shops were closed, but I heard that the Aristocrats Club was nearby and concluded from experiences in other cities that there would have to be at least a temporary dining room where for money and kind words one could get something, even at a late hour. I was not

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/243 cont./

122 mistaken. After long knocking, it was opened, and as soon as a lamp was lighted I was most surprised when I was addressed by my name, "Ferdinánd Ferdinándowitsch." He was a former gymnasiast from Irkutsk who knew me from there and was highly pleased to be the first /244/ to greet me here. He immediately called his foster father, a German baker who held the position of restaurateur at the club and gladly put his kitchen and cellar at my disposal. Czekanowsky was greatly delighted when after a short time I came home again with my companions, everyone loaded down with food and drink. How we relished food prepared in the European manner, fine pastry, European wine, after we had been deprived of them for a whole year!

The next day was devoted exclusively to getting our external appearance in as good a condition as possible. The barber was busy at other things in the forenoon, and so we could not accept the kind invitation of the governor, since we could not bring ourselves to present ourselves to him in our present state. If I had known at the time that there was photographic equipment here, I would not have failed to have our expedition photographed in pleno immediately after our arrival. Our clothing, which had lain in the trunks for almost a year, did not look fit for polite society, but the furs especially left much to be desired; I had to make my first visit to the governor in my old worn sheepskin, but on the next day, through the kindness of the above-mentioned German baker, I obtained a magnificent racoon fur. We could only console ourselves with the thought that in Jakutsk /Yakutsk/ no great demands would be made on the toilet of travelers appearing here, especially from the north.

On December 11, in a sled likewise put at our disposal by the chief of police, we paid our respects first to the governor and then to the archhieréij (i.e., archpriest, here bishop). The former, His Excellency Major-General Victor Páwlowitsch Dewítte, an elderly, unmarried gentleman, received us most graciously /245/ and asked us to dine with him throughout our stay in Jakutsk, which, of course, we accepted with gratitude. The

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122 fact that we had not received any assistance from him during our journey was due to the vagueness in the official papers sent to him by the Geographical Society. He had thought that we would explore only the upper course of the Olenék and then would return via Wiljuisk /Vilyuisk/ and had therefore sent the ispráwnik /ispravnik/ there the strictest orders. The latter, however, probably as lacking in energy as the one in Werchojansk /Verkhoyansk/, perhaps for the same reason, had answered all inquiries by saying that despite the most diligent investigations he had not heard anything at all about our expedition and therefore could not send any guides or other assistance to it, we had probably left his district entirely and gone into the neighboring district of Turuchansk /Turukhansk/. This was reported to the governor general in Irkutsk, and there, as well as in Europe, there was great anxiety about us, for only a major mishap would have caused us to change our itinerary. In any case the governor had also notified the isprawnik of Werchojansk, but, especially after the onset of winter, no longer expected us to come from there himself. All of our correspondence that had arrived in the meantime and 1,000 rubles which the Geographical Society had sent us as supplementary aid were likewise in Wiljuisk. Of course the governor nevertheless had the money paid out to us, for we urgently needed it. Furthermore, we learned from him that the Geographical Society proposed that, after sufficient recovery, of course, we should start out from here again in the following spring to travel from the Lena across to the Jenisseí /Yenisei/, and in doing so explore in particular the completely unknown basins of the Anábara and Lake Dshésse. /246/ We had to decline the offer, for, quite apart from the state of our health, we had already become convinced that such an expedition could only be undertaken from the Jenisseí, because is Jakutsk /Yakutsk/ it would hardly be possible to equip it adequately, or only with a disproportionate financial outlay.

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122 On the same day, at the governor's residence, we also met the Acting Councillor of State, Dr. of Med. von Awgustinówitsch, who had been delegated here to investigate the health conditions in Siberia and intended to visit Werchojansk and, if I am not mistaken, Kolýmsk as well. He had already

/246 cont./
114 been in southern Siberia earlier, and in particular on the island of
122 of Sakhalin, and from there, since he was not only a medical man,
but a very competent naturalist, had taken back to Europe ex-
cellent collections, chiefly botanical. I later had the pleasure
of renewing his acquaintance in St. Petersburg, from where he
now makes almost annual trips to Sakhalin as a doctor on a ship
of the Imperial Navy that takes convicts there. The museums
of the capital have obtained through Mr. von Awgustinówitsch
114 most valuable contributions from there remote regions. Further-
126 more at the hospitable table of the governor we met almost daily
an officer (now lieutenant-colonel) stationed here, Nikolai
Iwánowitsch Ssábo, who owned photographic equipment, with
which he had taken many views of the town of Jakutsk /Yakutsk/,
as well as portraits of Jakut /Yakut/ men and women in their
126 national costumes. Czekanowsky and I unfortunately could not
possibly get permanent impressions of the scenery and folk types
of the regions traversed by us. With all the pursuits that we were
obliged to do -- astronomical, magnetic, meteorological,
hypsometric observations, guiding the route of march with the
/247/ compass and clock, geological surveys, making the rich-
est possible botanical, zoological, and geological collections,
managing affairs, etc. -- we could not think of taking photo-
graphs or making sketches, quite apart from the fact that
photography, besides good equipment, also requires considerable
practice, and we could certainly not have acquired either of
these in Irkutsk in the short time left to us to prepare for the
114 expedition. The art of photography, moreover, seems to have
spread only recently to the land of the Jakuten and, as I have already
said, even to Werchojansk. The former governor of Jakutsk for
many years and the predecessor of General Dewitte, Privy-
Councillor von Stubendorff, whose memory is still held in high
esteem among the inhabitants -- he was an army doctor and
obtained this high post in recognition of his accurate knowledge
of the country -- had no photographs to exhibit among his very
large collections.

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122 The Bishop of Jakutsk, Dionýssij -- formerly missionary Chitrow -- surprised us even more. I had often enough had the honor of presenting myself to the highest government officials of the state, but I had never been in close contact with a high dignitary of the Greek Orthodox Church and cannot deny that I had some dread about this visit. How pleased I was when, as soon as we were announced, he hastened toward us in the anteroom with outstretched arms -- a handsome old man with magnificent snow-white hair and full beard, wearing a sky-blue robe -- and called out to me, "Tell me, now, where does the Siberian pole of intensity of terrestrial magnetism actually lie?" With every word of the ensuing conversation he showed a deep, penetrating understanding and a lively interest in all the natural sciences, /248/ and he was also familiar with French and German literature, although he himself could not speak these languages. All due respect to such a lord bishop of the Church, whose like is not often found in civilized countries and other confessions!

We conversed even more pleasantly during a second visit, when he spoke a great deal about his former journeys -- I have already mentioned them several times. He had specially invited me to breakfast, which consisted exclusively of fish, since the highest clergy in Russia may never eat meat, even outside of fasting. There were at least 15 different dishes: besides the sardines, caviar, etc. known in Europe, also native delicacies, such as pupkí, red and white salted fish bellies, of which the former in particular, which come from Kolýmsk, are highly prized here.

Inasmuch as the gentlemen mentioned were all unmarried and therefore did not entertain, I had no opportunity to become acquainted with the rest of Jakutsk society, which consists mostly of more or less rich merchants, and could not see for myself whether even now, as Wrangell /Wrangel/ says, the Jakut /Yakut/ language plays about the same role in the most distinguished houses here as French does in Europe. People seem to live quite comfortably here and even have an amateur theater. We were told that Gógol's "Marriage" was in rehearsal for the coming holidays.

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439 Trade has fallen off significantly in recent times and the days of glory are chiefly over for Jakutsk /Yakutsk/, since trade between here and Ochotsk /Okhotsk/ has entirely ceased as a result of the flourishing of the southern Russian ports on the Pacific Ocean. Whether the opening of the northeast passage by Nordenskiöld will direct the trade of Jakutsk into new channels /249/ remains largely undecided, but nevertheless much could be done to encourage trade by a regular steamship route on the Lena up to its mouth, which did not exist in our time and has not been established since then, as far as I know. The river itself would present few difficulties, fewer than the Jenissei /Yenisei/, and they could surely be removed entirely with relatively little cost. The excellent fish at the mouth of the Lena, to give only one example, are consumed almost entirely on the spot by the few inhabitants there, a very minimal part goes to Werchojansk and Jakutsk, but no farther, whereas the mouth of the Jenissei supplies a large part of Siberia, and, I believe, also the northeastern part of European Russia with smoked and salted fish of the most varied kinds -- I have even eaten these in St. Petersburg, to which, however, they are probably sent only exceptionally.

136 439 As I have said before, the most active time for trade is summer, at the beginning of which the barges come down the river with all the necessities required, and especially European goods; soon afterwards the merchants from the north also appear here, chiefly with mammoth tusks and furs. Now, in the winter, great scarcity prevailed and only the absolute necessities were to be obtained. For example, the combined efforts of the governor and the chief of police could not round up a few bottles of porter for us, even in private homes, when they accidently learned that we had a desire for it. A bottle of pale ale was the sole result of their quest. On the other hand, there seemed to be no shortage of champagne, and quite good champagne, to be sure, just as everywhere in Siberia, but at the time it cost eight to ten rubles a bottle.

/250/

439 136 Furs were also relatively expensive and difficult to procure. I paid 22 rubles for a truly very beautiful silver fox (*ssiwodúschka*; the blacker and more expensive ones are called *tschórno-búrije lissízi*, the wholly black, very rare ones, *tschórnije*), 15 rubles for one not quite so good, which showed a few reddish parts in the wool hair, whereas the corresponding prices on the summer market were supposed to be about 15 and 9 rubles. For 20 rubles I bought a fine cap sewed together out of black fox paws (for a so-called boyar cap). We were also offered true beaver skins (*Castor fiber*) from Kolýmsk, which, since they were shown to us frozen, we were inclined to take for calf skins, but we were told that the long red hair would later be removed and that the skin would then have its usual appearance. It is true that beaver is still found in the Kolýmsk district, but many skins that come on the market under the name of Kolýmsk may have been traded by the Tschuktschen /Chukchee/ and come from America.

136 171 I should like to note here that in Europe various skins come on the market under the name of beaver. The most expensive so-called beaver, called *kamtschátskij bobjór* in Russia, i.e., Kamchatka beaver, is actually not beaver at all, but a sea animal -- the sea otter (*Enhydris marina*), which is found only in the northern part of the Pacific Ocean and is becoming extinct even there as a result of its completely unregulated capture, at least in former years. The skin, almost black in color, velvet-like, and covered with gray overhair, is one of the most beautiful and highly prized furs, and a good skin is supposed to bring a couple of hundred rubles on the spot. The true beaver (*Castor fiber*), which formerly was found almost throughout Europe, Asia, and North America, but now /251/ occurs in only a few places in Europe and mostly on preserves there; just as it has also almost died out in Siberia and is still captured, as was said, only in the district of Kolýmsk and, in addition, in North America, has a very poor-looking skin, which in Russia comes on the market under the name of *njemétzkij bobjór*, i.e., German beaver. In addition there

136 /251 cont./

171 are many other more or less similar kinds of skins sold as beaver skins -- they are called false beaver.

132 Before I acquaint the reader in the following with the most interesting results of the local agriculture, I must first tell him the monthly mean temperatures for Jakutsk /Yakutsk/, derived from observations for almost 35 years, which I am taking from the previously cited work of Academician Wild, Die Temperatur-Verhältnisse des russischen Reichs /The Temperature Conditions of the Russian Empire/ (St. Petersburg, 1881). They are given in Celsius degrees for the months in new style.

Jan.	Feb.	Mar.	Apr.	May	June	July
-42.8	-37.3	-23.7	-9.6	4.5	14.6	18.8

Aug.	Sept.	Oct.	Nov.	Dec.	Year
15.5	5.6	-9.1	-29.8	-40.5	-11.2

The extremes are: maximum 38.8 C. = 31.0 R. in July, and -62.0 C. = -49.6 R. in January. The terrible cold of winter therefore corresponds to a very intense heat during the short summer. In order to characterize this specifically Siberian climate still more, I want to point out that my native city, Riga, which lies at about 57° latitude and has a mean temperature of +6.0 C., is somewhat cooler than Jakutsk in July, and the maxima are never equivalent to the Siberian ones.

241 I can say with complete justice that it is to this eccentric climate that Jakutsk owes its rich harvest of almost all the field crops found farther south. In any case it took great courage to count on such success here and to obtain it by force through years of toil /252/ against all prejudices, and I therefore regard it as my duty to preserve the memory of the name of the first local farmer, which we discovered. He was a discharged junior clerk, later community clerk, Konstantin Andréjewitsch Bolkáschin, whose first efforts are said to date from the year 1819. Not until 1825, on a piece of land worked by his own hands with a hoe, which he sowed with two poods of barley, did he succeed in getting a twenty-fold yield and through that aroused

/252 cont./

241 the interest of his superior, the community elder, Dmítrij
Danílow, who took part in cultivating the field the next year.
241 They obtained the always good yield of a ten-fold harvest, but
256 mills were completely lacking. They had to content themselves
177 with wooden mortars and obtained only a kind of coarse groats
which the Jakuten /Yakut/ did not care for at all. Although soon
afterward, with the help of a merchant from Oljókminsk/Olekminsk/,
better farm implements, which were immediately copied by the
excellent Jakut blacksmiths, and hand mills were obtained, a
Russian oven was built, and the first bread grown on the land was
baked, it was still a very long time before the Jakuten -- originally
a herding people -- became accustomed to agriculture. They
regarded it as a sin, and when their elder, Danílow, tried to
force them to do it, for he obtained better and better results in
the following years by making the land arable for sowing during
the year before, the dispute broke out into the open. Bolkáschin
and Danílow were suspended as a result of the constant denuncia-
tions of their subordinates, and Bolkáschin moved away entirely
to Jakutsk, while Danílow finally succeeded in convincing the
higher authorities of the value of his efforts and was reinstated in
office. Nevertheless, despite his /253/ work in the fields,
carried out on a larger scale every year, the Jakuten continued to
be quite indifferent to it.

241 Even up to the most recent times the agriculture of the
113 Jakuten /Yakut/ leaves much to be desired, for I have before me
a printed publication of the Statistical Committee in Jakutsk
for the year 1872, entitled: "Notes on Agriculture by the Jakutsk
Merchant Peter Maksímowitsch Leóntjew," whose introductory
words in particular are very characteristic, and I shall therefore
give them here in translation:

"Almost half a century ago the Jakuten began to engage in agriculture, but even now they still sow much less grain than they actually could. The reason is not so much that they have no interest in agriculture, but rather ignorance or a certain Asiatic stubbornness that compels them not to imitate the example of the Russians unconditionally, but rather to act according to

/253 cont./

241 113 their own ideas, whereby they often let themselves be guided only by chance. But this stubbornness either destroys the fruits of their labor completely or at least induces many to limit their sowing to such an extent that the harvest is not even sufficient for their own households -- as a result of this, they often suffer great hardship and then nourish themselves with only milk and spruce bark."

241 Leontjew himself has engaged in agriculture since the year 1836, and therefore the rules given by him, which refer to the choice of the land, the grains for sowing, the agricultural implements, and the preparation of the ground, are certainly of great importance. He particularly recommends sowing as early as possible, as soon as the ground prepared the year before has merely thawed on the surface, whereas the Jakuten /Yakut/ entertain the prejudice of not sowing before May 9. /254/ The following data with regard to this were given to me by a farmer there:

	Sowing:	Ripening:
Oats Millet	April 12-13	The first days of August
Summer rye	April 27-28	August 10
Barley Wheat	the first days of May	July 15
Hemp	May 3	The first days of August
Buckwheat Peas	May 7-8	

In this connection in the vicinity of Jakutsk in the years 1874 and 1875 the twentieth grain of the wheat, the eightieth one of the millet, and the tenth one of all the other field crops were harvested.

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241 The results of the agriculture in the province of Jakutsk are, to be sure, not so favorable, according to the official data furnished by the isprawnik /ispravnik/. I shall give here only the annual totals, whereas the report is much more detailed. The numbers refer to Russian chetvert (a grain measure = 2.1 hectoliters):

	Sowing	Harvest
1870:	5,131	20,229
1871:	6,050	12,614
1872:	5,682	19,725
1873:	6,621	14,388
1874:	6,708	35,259

According to this, the yield would be only twofold to fivefold, which, however, is by no means the case. The largest part
241 of the agricultural population, the Jakuten /Yakut/, intentionally
648 deceive the officials in every respect concerning their yield, so that favorable reports on the harvest may not be taken as an excuse /255/ to settle exiles in their district, against whom they have supreme contempt. The Skoptsy, on the other hand, who, as was said above, immediately devote themselves to agriculture with great diligence wherever they settle, falsify their statements about their harvests in order to drive up the market prices. Vegetables of all kinds, even cucumbers and, in hothouses, melons and watermelons, are cultivated with great success. I myself enjoyed excellent preserved cauliflower, the heads of which are said to become very large.

871 The bitter cold lasting during our entire stay and our health, greatly affected by the rigors of the journey, prevented us from seeing various points of interest in the city, except for a few churches and, among other things, the classical Progymnasium, in which Russian and Jakut boys are prepared for further training in the Irkutsk Gymnasium. The institution has four classes; Greek and Latin are required subjects. I myself, to be sure, am an advocate of classical learning and cannot imagine a true scholar without it, but I cannot now or ever approve of such a carrying out of the classical system as took

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871 place in the most remote corners of Russia under the former Minister for the Englightenment of the Masses, Count Tolstoí. Institutions of classical learning are, in my opinion, useful only for future scholars, and even though, in view of the very able mental abilities of the Jakuten /Yakut/, from all that I have heard, one or another Jakut youth may perhaps occasionally succeed in reaching the university, especially if wishes or even promises are made known from above, nevertheless, schools of a more technical nature, trade schools, agricultural schools, or commercial schools, would be more appropriate. It is /256/ by no means an exception, but rather the rule that the local Progymnasium accepts boys who must learn Russian and Latin simultaneously and, since the latter language is decidedly the easier one, soon understand the meaning of the Latin assignments, but are able to express it only in Jakut. This has been asserted to me by eye witnesses. Technical schools are predominantly needed throughout Siberia, where especially agriculture, commerce, and industry must be built up as quickly as possible. Under Count Tolstoí, as I was told in Jenisseisk /Yeniseisk/, a petition of the merchants there to found a technical school at their own expense was refused. Later, as far as I know, a classical Progymnasium was even built. I cannot become enthusiastic either about the idea of a Siberian university, which is supposed to be opened soon, but seems to me premature -- a polytechnical school would certainly more adequately answer the needs of the country.

800 Of the other points of interest in Jakutsk one must mention the remains of the fortress, which was erected by the Cossacks after their occupation of the country, for protection against the attacks of the Jakuten. Built out of magnificent larch trunks such as are no longer to be found in the entire vicinity, they have lasted almost two and a half centuries, and part of them have even been used for constructing a building, if I remember correctly, the very handsome clubhouse.

51: Müller--148 N-2 (1873-1875) 1882 RV2 Yakut RY2
Tungus RUS

/256 cont./

000 A further scientific curiosity is the so-called Schérgin shaft, famous for Middendorff's temperature measurements, by means of which the enormous depth of the ice floor was established scientifically.

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123 For making my magnetic observations, /257/ the governor was kind enough to clear completely the very large reception room of the club, and in particular even had the large metal chandelier taken down. Our young Tungus, Sseliphón, was following me with the instruments and suddenly, with a loud cry, stopped in the middle of the room. On the main wall hung a very well painted lifesize portrait of the emperor; my explanation that it was the emperor dumbfounded him even more; he made countless bows and could finally be convinced only with the greatest difficulty, after he had put his hand behind the picture several times, as children often do with mirrors, that it was merely a picture and not His Majesty in person.

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326 We would have liked to take with us as mementos some of the work of the Jakuten /Yakut/. Like most Turkish tribes -- the Jakut language is so similar to Turkish that Turks cast adrift here are said to make themselves understood very easily -- the Jakuten excel in iron work. We were also shown some ornaments very artistically made out of silver and iron, quite similar to the Caucasian work, but unfortunately they were not for sale. The Jakuten are also very artistic at works carved out of fossil ivory, although they are said to show little power of invention in doing it, but, on the other hand, copy perfectly. We bought a few paper knives which were obviously made from European models -- the handle was formed by a hand holding a cornucopia; we were also shown very pretty little openwork boxes made from Chinese patterns, but most particularly beautiful was a pair of large combs such as are used by the Russian clergy to arrange their hair, which is worn as long as possible. Bishop Dionýssij asked me to take these as a gift to his friend, the rector of the divinity school in Irkutsk. They showed three bishop's /258/ miters on an openwork background with the most elegant arabesques.

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291 281 In all other handcrafts, too, the Jakuten /Yakut/ do very commendable work. The Jakut wading boots made of horse leather with flexible soles, which are absolutely waterproof, are highly praised. The carpets made out of black and white horsehide in various patterns, usually put together in checkerboard fashion, form a separate industry.

122 After we had recovered somewhat and had gotten rid of our useless Cossack, who was sent along with a courier dispatched to Irkutsk by the governor, we also considered our departure. We had to make the journey as rapidly as possible, because along the greater part of our way, just as here in Jakutsk the smallpox epidemic raged at the highest pitch. All our quickly won friends here, among whom I must mention the veterinary Dr. Hollmann, a Livonian, who has befriended more than one traveler, gathered together in our quarters on the afternoon of December 16 in order to see us off. Since we ourselves were now spared the great concern about our collections and instruments, which for the most part were being sent, well packed, at government expense -- the Imperial Geographical Society enjoys the privilege of free transport for all shipments addressed to them or sent by them, provided only that the individual packages do not exceed one pood in weight -- it was all the same to us that the parting was prolonged until late in the evening.

In two sleds, Czekanowsky and I in a kibitka purchased here, the Tungus in a baggage sled to be repacked at every station, we finally raced out /259/ into the winter night, now again, according to the custom of the country, a stouthearted team of three horses in front of us. Although the still unfamiliar section of our present route of travel to Kirensk -- circa 2,000 versts -- offered enough of interest to us and in many places was particularly distinguished by picturesque beauty, we could no longer permit ourselves scientific investigations under the prevailing circumstances. We went on without rest day and night; there was no question of any difficulties in transport because, by means of the courier sent ahead of us, all the station masters were instructed to have the best horses waiting for us; at most our sleds occasionally needed some repairs. The way led, with a few

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122 interruptions, which were chiefly presented by Aufeis /surface ice/, over the ice of the Lena. The narrow road driven on was elevated above the surrounding surface of the snow almost everywhere, so that every approaching sled caused a halt, sometimes a very long one, when the vehicles, in the attempt to turn aside, fell off the roadway into the soft snow and then could be righted again only with great effort. More than once we were awakened out of a sound sleep by a sudden snow-bath, which, at a temperature of about -30° R is not a very pleasant surprise. My sole scientific work at the stations consisted of reading the aneroid in order later perhaps to calculate from that the approximate altitudes.

122 342 262 Never before or afterwards have I entered the stations with such repugnance as on this journey. In the Jakut /Yakut/ yurt between Werchojansk /Verkhoyansk/ and Jakutsk /Yakutsk/ it did not really smell pleasant, but here the stench was really beyond all conception. The dwellers along this part of the Lena, Jakuten as well as Russians, favor the /260/ peculiar taste of eating their fish, not prepared fresh or in any other civilized fashion, but after keeping them until they are completely fermented. All the dwellings are so poisoned with this horrible odor that it is actually hardly possible for a European to exist in them, to say nothing of eating, which, of course, is simply impossible outdoors. At every station where we wanted to eat, the provisions brought with us from Jakutsk, roasts and baked goods which our helpful friends had prepared, had to be kept in front of the fire for some time in 122 order to thaw out to some extent. It was undoubtedly on this very journey that I contracted the scorbutic complaint of which the European doctors could not completely cure me until several years later. It was therefore most agreeable to us when we received the news in the district capital, Oljókminsk /Olekminsk/, which we reached on the forenoon of December 20, that quarters were ready for us, since the isprawnik /ispravnik/ had been instructed in a special letter from the governor to give us as hospitable a reception as possible. Soon afterwards he appeared himself and very cordially invited us to lunch. We rested here a full 24 hours and then went on again to our next principal station, the hospitable Bánschtschikowa, not far from Kirensk, the previously mentioned

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122 point of departure of both this and the Tunguska expedition. We hurried so fast that we did not even take the time to make an excursion from the station of Nochtúisk to the nearby so-called residences of the local gold-washings. That is, this is the name given to the central points in which the officials of the gold washings live, where all the supplies are stored, and where possibly even the owners of the mines, if they /261/ /illustration appears here/ deign to visit them, might stop. The greatest luxury prevails here, even according to European conceptions, along with unlimited hospitality. I still recall with pleasure the exceedingly gracious reception given us upon our return from the Tunguska expedition in Jenisseisk /Yeniseisk/ at the home of the wealthy goldwasher v. Basilewsky, where I also had the pleasure of greeting the chief administrator, Mr. R. v. Pfeiffer, a former fellow-student, who was living here with his wife and children in a house furnished with the greatest comfort.

[197] After we had crossed, on December 23 in the station of Sherbinsk /Zherbinsk/, the boundary of the province of Jakutsk, at which the Jakut language also ceases as though chopped off, we entered Bánschtschikowa on the morning of December 28, where we were received like old friends by the entire Dmítrejew family and were able to devote a few days entirely to nursing our very weakened health. Our friendly hosts tirelessly exerted themselves to get us anything that might please us; we even had to go into their supply chamber in order to choose our wine. The most expensive wines of every possible kind lay stored there solely for strangers, for our simple hosts hardly drank them at all and could not even distinguish the kinds; in view of the many connections with the neighboring gold washings, however, strangers with more pampered palates than we poor scorbutic travelers had often turned in here. A short time before even the governor of Irkutsk had called here and with all his rank was received with the appropriate honors.

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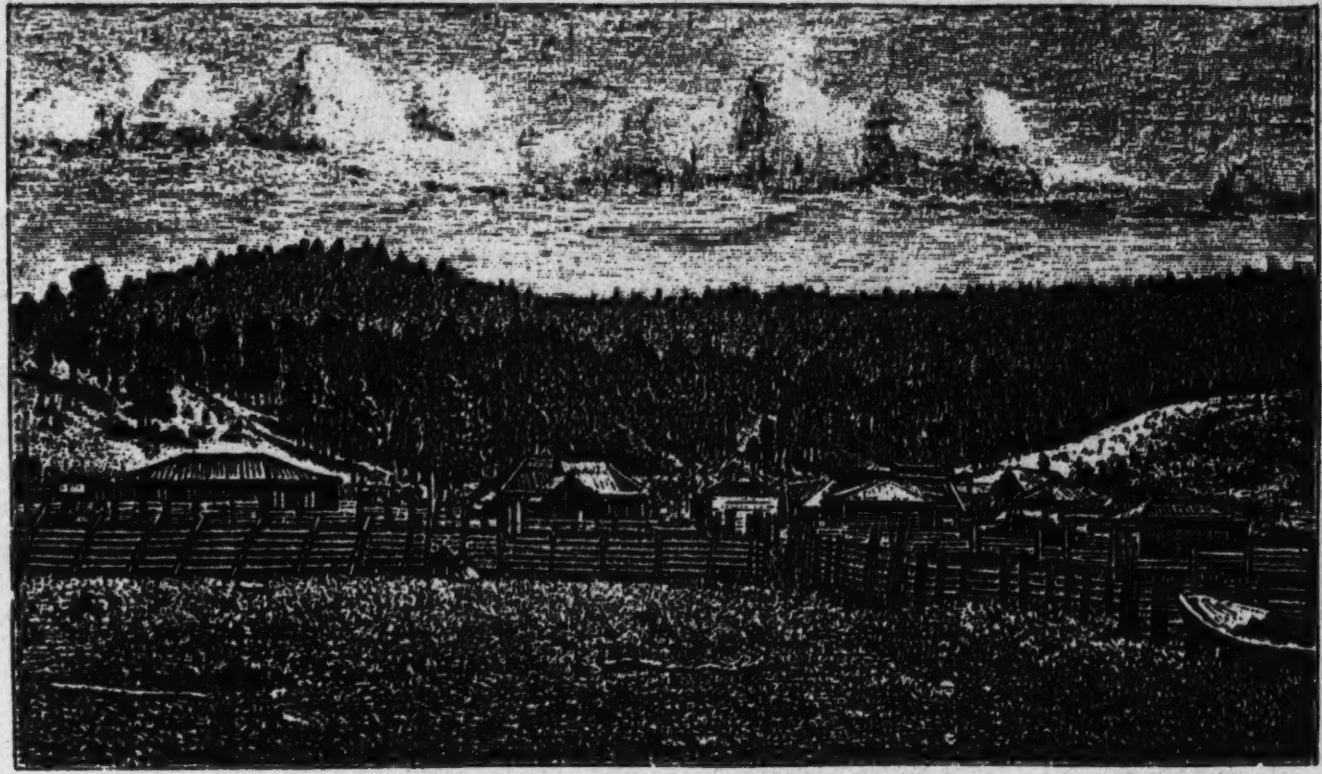
122 Besides all their other many business activities, the Dmítrejew brothers also carry on a very considerable fur trade, especially in squirrel skins, since the skins from the /262/ neighboring Oljókminsk district are distinguished among all the



Shérbinsk / Zherbinsk/ Station on the Lena.

51: Müller--152 N-2 (1873-1875) 1882 RV/2 Yakut RV2

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122 squirrel furs by their very dark, sometimes almost completely black 439 coloring and therefore are the most valuable. I would have gladly used this favorable opportunity to buy myself a good fur here first-hand, but I was afraid of the smallpox epidemic, which can surely easily be carried by furs.

122 In Bánschtschikowa we parted from the last two remaining traveling companions of our long journey, Golé and Sseliphón. The former, from Jakutsk on, had been guilty of many things, for he had yielded too much to drinking spirits after long deprivation, and therefore was not honorably discharged, i.e., he received only the stipulated compensation and, as a present, a Jakut carpet which I had entrusted to him and which was completely ruined as a result of his negligence. I presume that after this farewell he did not think of us again as friends until he had received the caftan of honor for this expedition, bestowed upon him at our recommendation. Sseliphón, on the other hand, was speechless with delight. He did not have a clear conscience, by any means, but since he had recently changed greatly for the better, in particular from Werchojansk on, where we had had him locked up for two days by the isprawnik /ispravnik/, we felt it was possible to make him a present of various household articles that had now become dispensable, among other things, a brass teakettle which he had guarded with particular fondness throughout the trip. It is quite possible, as Czekanowsky thought, that he set up a household on the Tunguska immediately after his return with the treasures that we gave him; in any case he would have made a great impression on his female compatriots, for in Jakutsk he /263/ bought himself various toilet articles undoubtedly still unknown along the Tunguska, for example, rose pomade, which he used lavishly.

After we had spent the evening of December 30 with our friends in Bánschtschikowa, we continued our journey and reached Irkutsk without incident on the morning of January 5, 1875, most warmly greeted by our friends.

51: Müller--154 N-2 (1873-1875) 1852 RV2 Yakut

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Twelfth Chapter
Siberia, Land and People

105 In Europe Siberia is regarded as a land of horrors -- terrible wildernesses alternating with endless forests, a climate in which at best bears and sable could feel comfortable, a very sparse population consisting of convicts, the scum of humanity -- that is the picture most people have of Siberia. Like many other things in the world, however, Siberia is much better than its reputation, as the reader will indeed have in part already deduced from reading the foregoing -- but he should not forget that I have described only the cold zone of Siberia and the northernmost parts of the temperate one adjacent to it, which even in Europe and America leave much to be desired. In my closing chapter I want to try to describe briefly the impression that the southern parts of East Siberia and the life there made on me; I regard this as all the more necessary inasmuch as there have appeared in the European press in the last decades many articles about Siberia, which, however, have been written almost entirely by former exiles and therefore are often painted too gloomily -- in such cases a certain prejudice is, of course, excusable.

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152 /265/ That Siberia -- I speak here exclusively of East Siberia, for I became acquainted with West Siberia only cursorily in traveling through it -- must be a beautiful country may be concluded merely from the fact that its inhabitants are attached to it with great affection and, away from their homeland, are as homesick for it as a Swiss for his mountains. But this is the case not only for those born there; I know a number of Europeans who, after they had lived for a long time in Siberia and then returned to Europe, could no longer feel at home there and in the end returned to the Far East; indeed, what is more, I know exiled Poles who were sent home after serving their sentences, felt a longing for Siberia again, and set foot upon its soil the second time voluntarily.

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/265 cont./

133 Indeed, this infamous Siberia is exceedingly beautiful, as the most blasé tourist would have admitted to me if he had looked down with me from the Shamans Cape near Kultúk (barely 100 versts from Irkutsk), consisting half of granite, half of snowy white marble, and covered with luxuriant forests, into the crystal clear waters of the Baikal, in which the smallest pebble can be seen several fathoms deep and in which are reflected the romantic mountains of the shore, if he had marveled with me from the peak of the Chamár-Dabán (on the southwest end of the Baikal), about 7,000 feet high, at the panorama of this alpine world, embracing hundreds of versts, or had gone on horseback from Irkutsk up the valley of the Irkút, on the right, for several days of travel, the picturesque peaks of the Tunkin Alps (Tunkínskije Bjélki, i.e., white mountains, thus the same as the German "Alpen"), on the left the table mountains of the Saján /Sayan/, higher and higher to the patriarch of the Siberian mountains, the majestic Múnko-Ssardýk /Munku-Sardyk/, 11,000 feet high, and looked down from its /266/ peak, covered with eternal snow and ice, to the great alpine lake, Kossogól, already lying in Chinese territory. I have emphasized here only a few especially beautiful parts, but the entire country is like this -- a mountainous land from the Amur to the far north, full of the most magnificent landscapes like the ones so highly prized by European travelers in Switzerland.

132 Many people will certainly ask, "What good is beautiful scenery in that fierce Siberian climate, which simply cannot be denied?" I must reply that I decidedly prefer the climate of southern Siberia to the European climate in the same latitudes, and I should like to give some reasons for this statement. While bare figures actually say very little, nevertheless, following the work by Wild already cited several times, I am giving the mean temperatures for the months, new style, in Celsius degrees for Irkutsk, which lies at almost exactly the same latitude as Warsaw and Berlin, for comparison with the data given earlier for the northern places.

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Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
-20.5	-16.6	-8.4	2.4	9.2	15.3	18.8	16.2	9.5	1.0	-10.6	-17.4	-0.1

According to observations for 28 years the extremes are +39.5 C. = 31.6 R. in July and -43.0 C. = -34.4 R. in December. For Warsaw the corresponding data according to the same source are the following:

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
-4.4	-3.1	0.4	7.0	13.1	17.3	18.6	17.9	13.4	7.8	1.5	-2.9	7.2

The extremes +35.5 C. = 28.4 R. and -33.1 C. = -26.5 R.

Thus in general Warsaw has a much greater quantity of heat throughout the year than Irkutsk, but the difference stands out sharply primarily only in winter, whereas in July Irkutsk is even slightly warmer, but the extremes there are significantly greater. /267/ These scientific data, however, very inadequately characterize the difference in climate.

The great advantage of the Siberian climate is its stability. In Irkutsk there are still beautiful days in September, although the nights are already quite cold. The first snow usually falls toward the end of October and remains, after a brief struggle with thawing; the winter's sled course is often formed in this month, at the latest in November, and lasts the whole winter, but in some places, as in the vicinity of Krassnojarsk /Krasnoyarsk/, is very meager. The endless alternation of freezing and thawing, snow and rain, is unknown to the Siberian -- to be sure, there are variations of temperature in winter, but they do not go up and down around the freezing point, as in Europe; rather their maximum, with exceedingly rare exceptions, lies below it. And what about this notorious

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132 Siberian cold as compared to that of Europe. At intense degrees of cold, the air, almost without exception, is very still, the sky absolutely clear, and the sun acts so strongly that often at -20° R. water runs off the roofs, and for a person walking -- in furs, of course, which even the poorest beggar owns -- it is almost too warm. How different it is in Europe, where the biting north wind often penetrates the warmest furs when it is much less cold, and it would not occur to anyone, with the temperature at -20° R., to enjoy the winter air without a good reason. When warmer weather appears during April, the snow disappears as quickly as it came; in the first half of May the meadows already sparkle in the most magnificent green, covered with the most beautiful spring flowers. And then there is the summer, somewhat too hot in the towns, to be sure, but all the more beautiful in the clear mountain air and on the cooler shores of the Baikal.

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164 /268/ A second advantage is the dryness of the climate, which is so great that wooden articles, even the soundboards of pianos which have been manufactured in more humid countries, are often unserviceable after brief use. This stability and dryness of the climate are excellent for one's health; I know from my own experience that after a stay in Siberia for years one finds it very difficult to become accustomed again to the damp and unsettled climate of Europe. Lung ailments are unknown in Siberia, and tuberculosis patients who come here often find a cure or at least alleviation from their suffering; widespread epidemics, with the exception of smallpox, have not penetrated here either. Rheumatic ailments are the most common, very understandably
[133] in view of the way of life of most Siberians. The excellent mineral springs, which are present in Transbaikalia in large numbers, offer cures.

137 And now the vegetation, which adorns the Siberian summer with her richest gifts. The European misses many trees that please him at home. Maples, oaks, lindens, chestnuts, not to mention beeches, which only rarely occur even in European
[262] Russia, do not go much beyond the Urals. The Siberian, too, has flowering fruit trees, but they bear small, berry-like fruits,

Historical Siberia RR2

/268 cont./

137 which, boiled in vinegar, are suitable only for salads (*Pyrus baccata*).
[262] And yet the Siberian forest is magnificent -- fir and pine, but
particularly enormous larches, and in the mountains the incom-
parable cedars, mixed with birches, willows, aspen, poplars, and
everywhere a vigorous and most varied undergrowth and the most
luxurious herb vegetation. Indeed what the Siberian proudly as-
serts, that in summer his country looks like a garden in bloom, is
quite true. How many of the ornamental shrubs only cultivated in
gardens among us does the traveler encounter here in the midst of
the wilderness; I shall mention only the *Rhododendron* /269/
dahuricum, which in early spring, with its beautiful red blossoms,
covers all the slopes, which then look entirely pink, until they
gradually exchange this clothing for the green of summer; the
Caragana sibirica known all over Europe and the *Caragana jubata*
(the camel tail, as it is called here), striking because of its
[262] strange form; then a number of the most beautiful spiraeas and a
[273] great abundance of berry bushes which amply make up for the lack
of other fruit for the Siberian and from which the Siberian house-
wife knows how to make in particular very delicious fruit liqueur
(*nalíwka*). The genus Ribes in particular has a great number of
species to exhibit, which go far to the north -- I have picked more
beautiful red and black currants in the midst of the virgin forest
than the most carefully tended garden in Europe can exhibit. And
how shall I describe the magnificent floral splendor that glows be-
fore the traveler everywhere -- these roses, quite remarkable lilies
with scarlet flowers, for example, *Lilium tenuifolium*, which are
sold for high prices by European nurseries, peonies, Hemerocallis,
asters, carnations, gentians, violets, for example, *Viola altaica*,
which is like our modern blue "little stepmother" /pansy/ in color
and size and perhaps is its ancestral mother, Cypripedia, especially
Cypripedium macranthum, with large lavender flowers, and
Cypripedium guttatum, somewhat smaller, with brown and white
spots, Aquilegia of all kinds, delphinium, aconite, iris, one small
species of which, with violet-blue flowers and a strong violet
fragrance, completely covers the forest floor in early spring; and
among all these the true alpine plants, which a botanist would

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137 scarcely have expected here, such as the charming edelweiss (*Leontopodium alpinum*), which in Europe is found only on the steepest alps, but on an insignificant hill near Irkutsk and /270/ even on the level steppes around the Kossogól. Even the abundant and luxuriant flora of the steppes, which I admired some years ago on the Don, falls behind this wealth of flowers. The Amur, which I do not know from personal observation, has an even richer and very peculiar flora. Here again more leaf-bearing trees appear; grape vines even grow wild in the southern part and provide, even if not wine, nevertheless very tasty grapes.

241 Agriculture, and especially the cultivation of vegetables, is, to be sure, very far behind, but the inhabitants are to blame, not the soil, which almost everywhere, except for the regions lying very high, such as the upper part of the Irkut valley and the area near the Baikal, which only warms up to about 6° R., is able to bear rich harvests. The district of Minussinsk /Minusinsk/, the southernmost part of the government of Jenisseisk /Yeniseisk/, is the granary and vegetable bin of Siberia.

136 Furthermore, if we consider the fauna of the country, we find here, too, a wealth and variety such as densely populated Europe could have known only in long-ago primitive times. I shall not speak here at all about the fur-bearing animals for which Siberia is famous, but which are retreating before the human beings more and more and therefore become scarcer every year in the south, and, indeed, even to some extent in the north as well. Despite a complete lack of game laws of any kind, which, however, will soon be inevitable for the protection of game, especially in the vicinity of larger towns, the Siberian forest still offers the hunter no limit of great enjoyment: From the deer family alone, he meets, for example, in the vicinity of the above-mentioned village of Kultúk on the Baikal, the red deer, the roe, the elk, the musk deer, and higher in the mountains an occasional wild reindeer, and, to be sure, in specimens that in size /271/ exceed half again the largest European representatives of their kind. There are still giant forms with their colossal antlers, such as lived in the forests of Germania at the time of the Nibelungs. The intrepid hunter whose greatest pleasure is to hunt the savage bear

51: Müller--160 N-2 (1873-1875) 1882 RV2 Yakut

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136 trembles before the hoofs and antlers of the wounded elk; for him the slaying of such an animal is a praiseworthy heroic deed which is his favorite to relate in the glow of the campfire. There is also no lack of wild boars in the mountains; in some places the rider must dismount because the ground has been completely torn up by the wild pigs. In the high mountains ibexes also occur. Bears, wolves, foxes, and lynxes are found in abundance; indeed, the southern Amur even has the true royal tiger, which, in spite of the severe winter cold, feels as much at home here as in hot Bengal. The fancier of smaller game finds hares, which, however, are not at all overly common, but, on the other hand, winged creatures in tremendous numbers, beginning with the huge mountain cock, moor hens, which at dawn often sit calmly in flocks of many hundreds on the trees along the road and are not in the least disturbed by the noise of the vehicles, hazel hens, white grouse, and, in Transbaikalia, prairie hens, pheasants, and bustards as well. The number of the most varied water birds and swamp birds is legion. Sometimes guests also come from the far south; for example, years ago a flamingo is said to have been killed near Irkutsk.

231 The luxuriant vegetation is also favorable for livestock breeding; in particular there are very good horses in Siberia, as the traveler immediately discovers as soon as he has crossed the Urals; the farther east he goes, the faster he travels -- the spirited horses can hardly be reined in and gallop on with incredible speed; the Burjaten /Buryat/ horses too -- the Burjate has /272/ almost grown up with his horse from earliest childhood on -- have great endurance and are to be recommended particularly for mountain journeys. There are also good beef cattle; here and there in the southern sections even Mongolian yaks (Bos gruriens), pigs, sheep with fat tails, which are very tasty, especially in the mountains, also goats, and feathered creatures of all kinds are raised, but everything still on much too small a scale. Really efficient animal husbandry, like almost everything in Siberia, remains reserved for the future.

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136 114 In the above I have considered the game and domesticated animal kingdom only in a cursory survey, but what a wealth of forms and species the professional naturalist finds in all domains of the lower and higher fauna. Anyone who wants some notion of this must study the collections of the Imperial Academy of the Sciences in St. Petersburg. What scientific treasures already lie stored there, and yet how much still remains beyond that; up to now, to give only one example, no investigator has undertaken a unitary treatment of the exceedingly rich fish world of Siberia, and in many other domains, too, the specialist still finds large gaps.

135 Shall I tell the reader about the mineral treasures of Siberia? It is universally known that Siberia is the land of gold, of rare and precious stones. In almost all European castles and museums one finds representatives of precious Siberian stone-working, which are often obtained as gifts from members of the Russian imperial family. They are found in the greatest number and perfection, however, in the palaces of the two Russian courts, especially in the magnificent halls of the Imperial Hermitage in St. Petersburg, while splendid specimens of unpolished minerals can be admired in the museums of the Academy and the Mining Corps. /273/ The reader will realize what incalculable value rests in these things when I tell him that some of these vases, quite apart from the valuable material, have taken 30 years and more in labor, because the jasper is very hard and is difficult to work. Almost all these stones come from the Urals and are worked in the imperial lapidary works in Jekaterinenburg /Yekaterinburg/; the Altai has provided others. Smaller things, particularly seals, letter presses, and the like, can be bought for very cheap prices in Jekaterineenberg because of the numerous lapidaries.

East Siberia too is rich in precious stones, although they are not yet as methodically exploited as is done farther to the west and lapidary works are still completely absent. The mines from which the world famous lapis lazuli is brought lie 30 versts from the above-mentioned village of Kultŭk in the valley of the Býstraja, a tributary of the Irkut. It is completely absent in the Urals and is found in addition only in the Kirgisen /Kirghiz/ Steppes, but

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135 the quality is greatly inferior. From here come the magnificent columns of the Cathedral of Isaac in St. Petersburg and the Church of the Redeemer in Moscow. The mines are imperial domains and are worked only from time to time at the highest command. Nértschinsk /Nerchinsk/ is also known for its valuable stones. North of Múnko-Ssardýk /Munku-Sardyk/ lie the famous graphite works, which formerly belonged to the Finnish merchant Alibert and supplied the material for the best pencils of the Faber Company in Nuremberg. The tremendous difficulties of transportation caused the owner to shut down the works; in more recent times, however, they have been put in operation again because it is considered more advantageous to make graphite crucibles for the gold smelting in Irkutsk from domestic materials rather than to order them from abroad. On the lower Tunguska, too, there are /274/ rich, but as yet unused beds of the finest graphite.

135 There is no lack of coal and all kinds of ore -- quite near
316 Irkutsk, for example, good lignite appears at several places, but at most it is used by a belated hunter for a campfire. Who would bother about such things here when the ground conceals quite different treasures -- gold in abundance, and anyone can dig it. He may not keep it, however, but is required to hand it over to the government for a set price; for individual, larger, superior pieces which he might want to keep, say, as a rarity, special official permission must be requested. The crown has long since given up its own gold washings, for control was very difficult, and has only retained the supervision, which is entrusted to the mine officials (górnije ispráwniki) /gornyi ispravniki/) stationed in the gold-washing centers. Although it is therefore quite easy to become a Siberian gold-washing owner and thus acquire an expectancy for millions -- one need only to ask for some uncultivated piece of a river valley and have it measured by the officials appointed for this; the taxes are very low -- nevertheless there is many a catch to the thing and only persons who are already very wealthy and have considerable local and expert knowledge have a chance of success. Gold mining is the most hazardous game of chance that there is, for no gambling table has such stakes as are required here.

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135 Above all, it is a matter of the choice of location, for
316 although almost all the Siberian rivers and streams contain gold, it is largely a matter of the quantity of it, so that the work will pay. Therefore the millionaire in spe first equips scounting parties of workmen led by experienced miners, /275/ who roam about for months in the wildernesses as far as possible from the commercial centers -- the closer ones, of course, offer far fewer opportunities or are already in the hands of other owners -- and take test diggings at localities that seem favorable. According to the results from them, the entrepreneur then chooses his pieces of land and estimates the amount of gold he hopes to get. The number of workmen and the amount of supplies are governed accordingly and in conformity with existing regulations. This eats up tremendous capital, and the outcome is quite uncertain. How often it happens that the tests are much richer than the surrounding ground; the master miner has just hit on a bed where the gold lies tightly packed, while all around not a grain is to be found; or the gold-bearing stratum lies deeper than was expected, there is a lack of sufficient water, the ground causes unexpected difficulties for mining -- then hundreds of thousands are often lost and the gold washer must seek more productive terrain the next year, if he still has the means for new enterprises. Embezzlement of all kinds, on the part of the workmen as well as on that of the overseers appointed for them, can hardly be entirely avoided, of course, even with the keenest supervision. Many a person who in a short time had acquired respectable capital of a single year; he was forced to stake his entire capital on one card -- it went against him.

And then even the richest gold washings are not inexhaustible. During my stay in Jenisseisk /Yeniseisk/ in the autumn of 1873 people were already complaining greatly about the exhaustion of the gold fields on the Pit, a right tributary of the Jenissei /Yenisei/, which had formerly given enormous yields; at that time, /276/ with regard to productiveness, the gold districts of Oljökminsk /Olekminsk/ and Witím /Vitim/ stood highest; soon after that came reports of rich finds in the Amur

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135 area -- in short, there is still plenty of gold over the broad terrain; only a comparatively small part of the almost boundless
316 area has been explored, and millions upon millions in Siberian gold will flow into the Russian state treasury and enrich the fortunate discoverers.

600 I hope I have succeeded in giving, even though in a few strokes, a graphic picture of southern Siberia, this land so richly blessed by nature in every respect. There are perhaps many features in this picture which are reminiscent of descriptions of the Far West of North America, and, as a matter of fact, this similarity is striking. Just like North America, Siberia, too, is the land of the future, but surely a far more distant future, for, while the former has worked its way up in the last half-century with a monumental speed and energy hitherto unknown in cultural history and has already outstripped the motherland of Europe in many ways, in Siberia the first buds of the culture just now sprouting can barely be discovered. If, however, we do not want to be unfair, we must also state that there are plenty of reasons for this.

North America, like no other country, was created for world trade; it borders on the two oceans and a large part of the interior too is open to navigation by means of the great drainage
133 area of the Mississippi and the northern lakes. How different in Siberia, which, to be sure, is also bounded by two oceans, but
503 they can be navigated only for a brief period of the year and only with great danger and /277/ scarcely permit regular trade connections; although also rich in large navigable streams, they can almost solely be used for local traffic. Only the Amur might allow a more active trade with foreign countries, if its mouth did not unfortunately lie too far north and therefore cause great difficulties
648 for navigation. And despite all these obstacles Siberia might have been able to develop more rapidly if on the southern boundary it had had a neighbor other than China, which up to more recent times has been almost hermetically sealed to all foreigners, and from which, moreover, it is separated by vast wildernesses.

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However unfavorable the geographical location of Siberia thus may be, it alone still does not explain the fact that Siberia has remained so far behind in its development up to now. The chief reason lies in the population. North America was first populated by the most highly educated nations of the world, who brought along a high culture. They were mostly peaceful citizens, merchants, craftsmen, farmers, who left their fatherland in part on account of political and religious persecution and in part in the hope of richer /67 gains and established a homeland in the New World. But who were /75 the first Europeans in Siberia? Cossacks, that is, in other words, bold adventurers, or, according to our present conceptions, brigands, who did not have a lick of culture, who wandered homeless all their lives, intent only on the richest possible booty, which they seized with weapons in hand wherever they found it. Then, when finally even in vast Siberia there was nothing more to conquer, when the Russian government gradually put a stop to the activities of the bold freebooters and forced them into more peaceful lives, then in turn exiles annually came in great swarms into the beautiful land, robbers, murderers, thieves, in short, criminals of all kinds. In America, /278/ to be sure, there is no lack of riffraff for whom Europe, with its police and prisons, has become uncomfortable and who therefore seek their fortunes across the ocean, but they disappear there in the crowd, can exert absolutely no influence on it, and, if they do not reform, are soon made harmless. In Siberia, so sparsely populated, it is different.

To be sure, the Russian government cannot be blamed for using Siberia as a place to settle criminals since the time of its conquest--any other government would have done the same, for, aside from the fact that it is more advantageous to leave criminals to their own devices in a remote land than to care for them in prisons at the expense of the state, there was also the hope that with the help of these involuntary settlers the land would be cultivated and through that become useful. Subsequently, in spite of unfavorable conditions, the culture has made considerable progress in the last decades, at least in the Siberian towns, and among the people themselves the wish has been ever more urgently

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167 expressed that the country no longer be used as a place of exile, 175 the government has turned to this problem, and even though a number of criminals are still deported to Siberia annually, the establishment of a penal colony on the island of Sakhalin, the transport to which does not go through Siberia, but on warships via the Suez Canal, shows that gradually Siberia will be wholly freed from this scourge.

167 Among those deported, incidentally, two categories must 563 be sharply differentiated, common criminals and those sentenced to deportation for political offenses. Among the latter the Poles exiled because of the revolution played an important role during my stay. /279/ It is not to be denied that Siberia is greatly indebted to them. They could only with difficulty exert a harmful influence on the population because their specifically Polish patriotism was inexplicable there; in addition they stayed far away from the Russians, and thus there remained only the beneficial influence which they must necessarily exert in view of their higher culture.

My traveling companion Czekanowsky is not the only Pole who during his stay in Siberia worked at exploring the land with the greatest zeal and high intelligence. Exiled doctors also continued their practice here and were active in their profession, especially in the country, often with the greatest unselfishness. Before the arrival of the Poles inns and restaurants were practically unknown, even in the larger towns; now there are such in nearly every little hamlet, and almost without exception they are in the hands of Poles, who, in view of the high prices which the lack of competition allows them, in part already enjoy great prosperity. Others engage in various trades, sometimes not corresponding at all to their former standing. For example, the excellent wading boots that served me so well on my travels were fashioned by a Polish shoemaker who by profession was actually a candidate in mathematics. Another Pole, who formerly, so I was told, had been a colonel of the lancers, earned his living by making cigar holders, pipes, album covers, etc., which he carved out of the very hard and heavy Transbaikalian peach wood and really masterfully inlaid with gold and silver wire. Everywhere one finds

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167 Polish tailors, bakers, sausage makers, etc. I know less about 563 their agricultural activities, but here, too, as far as I know, they have been useful by acclimatizing so many cultivated plants of their /280/ homeland, which up to then were unknown in Siberia.

167 563 668 What I have said about the Poles can in no way be extended to all the others exiled on account of political offenses. The nihilists with their destructive principles are most dangerous to any society but especially to an uneducated or half-educated one, and above all to the growing youth, and therefore a settlement of them in Siberia would be decidedly hazardous. It is indeed strictly forbidden by the Ministry for the Enlightenment of the Masses to allow political offenders to give instruction, even as private teachers or tutors, and therefore lists of the condemned are constantly being sent to the school board in Irkutsk, although strict supervision is quite impossible, even in the principal centers. Revolutionary propaganda in the villages and smaller towns simply cannot be stopped by the few government officials 105 stationed there. Therefore, if settlement in Siberia is not to be given up entirely, it seems imperative to gather the exiles together in independent colonies, which must be strictly separated from the rest of the country by border cordons. This would apply, of course, not only to the nihilists, but also with respect to the common criminals.

167 159 For the latter, settlement in Siberia is one of the most humane penalties that could be imagined. Youthful criminals in particular, if they repent of their crimes and wish to return to a respectable way of life, have the best opportunity to do so in this beautiful and rich land. In time they may even become wealthy and respected persons. I remember, for instance, a German cabinetmaker in Irkutsk, /281/ who was sentenced to exile about 40 years ago on account of a scandal committed in a drunken state, in which he had seriously wounded his opponent, and has now become a well-to-do man, a homeowner, indeed even an elder in the Lutheran church in Irkutsk, enjoys general respect, and his sons are likewise at the head of flourishing, independent businesses. Such cases probably happen frequently;

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167 nevertheless the danger for Siberian society, which is continually
563 exposed to it through the incorrigible rabble that indeed will always form the great majority of exiles, must not be underestimated. I remember the terrible fire in the summer of 1879, which reduced to ashes the largest and most beautiful part of Irkutsk and with it the collections assembled with the greatest efforts and the rich library of the Siberian Section of the Imperial Geographical Society, certainly not without the participation of incendiaries from among the tramps (brodjági /brodiagi/) who overrun the towns and highways of Siberia.

697 One can form some conception of their number when I
167 mention that during the surveying of the road from Kansk to
563 Irkutsk carried out by me in the summer of 1875, according to the notes of my assistant, 200 escaped convicts came our way in the course of a few weeks, most of whom he questioned briefly and learned that almost all of them came from Transbaikalia, where the worst criminals sentenced to hard labor are imprisoned. I am not familiar with these prisons from personal observation, but it has to be concluded from the large number of fugitives that the supervision there is very inadequate. I cannot say what will become of all these unfortunates. Probably /282/ only a few succeed in reaching their homes, where, of course, they cannot appear openly and are therefore forced to commit new crimes. Irkutsk and other larger towns are full of this riffraff. A large number of the servants are deported convicts, and it is usually very difficult to determine whether they have actually been pardoned or have escaped punishment on their own; the police themselves are not in a position to exercise proper control. In general one prefers murderers to thieves as servants, for the latter, as I know from my own frequent experiences, are completely incorrigible. Runaway and released deported convicts make up the chief contingent of the workers at the gold washings, indeed, even for work carried out on behalf of the crown; with respect to the latter one cannot be very strict, because of the lack of other workers. Thus, if, as is to be hoped, deportation to Siberia is either abolished entirely or at least only completely isolated penal colonies are established, at the same time the

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167 /282 cont./
most energetic steps would have to be taken to procure the neces-
563 sary work force for the country in other ways. The native peoples--
697 the Tungus, Jakuten /Yakut/, Burjaten /Buryat/, Samojeden
/Samoyed/, Ostjaken /Ostyak/, which the Russians include under
563 the name of Inoródzy (i.e., from other tribes) -- are not very
numerous and would probably be difficult to use for any kind of hard
labor--with the possible exception of the Jakuten. Any civilizing
of them is simply inconceivable, even though individual excep-
tions may have occurred and may also occur in the future.

The government has perceived for a long time that voluntary immigrants bring considerably greater advantages to the country than forced settlers, and there has been no lack of attempts /283/ to populate the southern Amur in particular; if up to now these have not led to the results that one was entitled to expect of them, and, indeed, many a one has failed miserably, this must be attributed to errors in the organization of these settlements. The condition of the peasantry in European Russia has become very difficult since the abolition of serfdom. There are complaints everywhere about the shortage of land, poor harvests, and epidemics. In Siberia, on the other hand, land is available in abundance, the fertility is great, and health is excellent. Therefore an emigration of Russian peasants to the place seems obvious, but--and this is what has been wrong most of all up to now--one cannot expect any initiative from the peasant, who has become completely dependent through centuries of servitude. Just as he was guided by his master up to a short time ago, so must he now be guided by the government, particularly for such a move with all one's worldly goods and wife and child into a strange and distant land that can be reached only after months of travel and where everything is very different from the homeland. He should be constantly supervised there during the first years, given support and good advice, and in particular, in case of eventual failure, he should be prevented from hiring out as a worker in the gold washings, which up to now have absorbed the majority of the work force, but decidedly exert a demoralizing influence in every respect. Likewise Russian craftsmen and tradesmen of all kinds, even simple factory workers who can no longer adequately earn their daily bread in Europe, confronted on the one side by increasing

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competition and on the other side by a rising cost of living, would find it in abundance here, if they bring with them good will and proficiency in their craft. But /284/ here, too, the government must intervene, particularly to regulate supply and demand. A really capable expert of any kind, especially the head of a family, will hardly decide, even in hard times, to emigrate to a country that still unfortunately has such a bad reputation, if more secure guarantees are not offered to him in some measure. Perhaps such guarantees could be given by private companies--there are enough capitalists in Siberia--but the government must exert strict control, so that the colonists would not be most unscrupulously exploited, as happens often enough in transatlantic countries.

Populating Siberia in this manner, primarily with Russian settlers, but perhaps also with foreign ones, who would probably make their fortunes much more easily here than in highly competitive North America, must surely have a most prosperous outcome--but a great deal is required to bring it about. Aside from the millions that would be required for such an undertaking, it would depend principally on a most careful selection of the officials, who would be entrusted not only with the management, but with the execution in all the details. Unfortunately, in Siberia now one still frequently lives according to the principle, "God is in heaven and the emperor is far away"; temptation is great in a land where not only the emperor, but often his representatives as well, the governor general and the governors, are thousands of versts away and where, through years of practice, the notions about permissible perquisites have become very broad. In the preceding chapter I have already spoken about the schools with primarily practical aims that are necessary for Siberia; such a "technical school," founded by private persons, already exists in Irkutsk, which, with its many defects, nevertheless /285/ is to be highly esteemed as a first beginning. The pupils of such schools, with sound theoretical and practical knowledge in various crafts, agriculture and forestry, mining, and the like, combined with a thorough knowledge of the land and its characteristics, would be the best organizers of future immigrant colonies.

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A most important question still remains--the railroad question. In my opinion, in reviewing the project of a Siberian railroad, which, if it is really to fulfill its purpose, must certainly be carried to the Amur, one must be guided not only by the present trade and communication needs--from this standpoint its profitableness might perhaps be questioned in view of the great length of the road--but must keep in mind the future colonization of the country. The closer the country is brought to Europe by means of suitable transportation facilities, the greater is the prospect of persuading abler forces of all kinds to 496 settle here. During my stay in Siberia, the post from St. Petersburg to Irkutsk was en route for a month on an average; the 468 versts of railroad added in the meantime from Perm to Jekaterinenburg /Yekaterinburg/ could have changed this only a little--at most two days. During the raspútitza /rasputitsa/, that is, the time of bad roads in spring and fall, particularly if the many large rivers which the post road crosses, and which have no permanent bridges but only often very primitive ferries, become impassable because of the breaking up of the ice, traffic is completely stopped temporarily, and it may happen that the post is delayed for a full month and therefore is two months en route. 206 Beyond Irkutsk, communication is even more difficult. /286/ I need not discuss in greater detail how much these difficulties of communication hinder the development of the culture. Sometimes supplies of the most essential things are lacking and then the prices for all the necessities of life, always very high, go up in the most exorbitant fashion. Furthermore, the administration of the country finds itself in a very difficult position, for, even though, after completion of the telegraph line from Europe to China and Japan, connections with the central government in St. Petersburg have been greatly facilitated, not all business by far can be carried on in this way; to bring up only the matter of cost, the price of an ordinary telegram from Petersburg to Irkutsk comes to five rubles. The railroad would put an end to these drawbacks with one stroke.

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647 Despite the advantages which government service in Siberia
167 offers with regard to salary, traveling expenses, advancement,
and pensions, it is nevertheless difficult to obtain really able
officials, particularly for the higher posts. Not only the officials
themselves, but in many cases the government as well, regard
a transfer there as banishment, and it has happened to me that
well-meaning superiors sought to dissuade me in my own interests
871 from my decision to go there. Under present conditions this is
justified to a certain extent, at least for older persons and particularly
heads of families with growing children, for, although
various educational institutions exist there, to be sure, as I have
already said, and the educational programs are the same throughout
the empire, nevertheless most of the teachers, and accordingly,
of course, the pupils as well, are on a much lower level
600 than in Europe. For a young unmarried man who has only himself
to support and faces Siberian conditions with honest intentions
and lively interest, /287/ a stay, even though lasting only
a few years, is decidedly recommended even now, despite all
the inconveniences. I myself count not only my long travels in
Siberia, but also my stay in Irkutsk itself as some of the pleasantest
memories of my life, and it has been the same for many of
my acquaintances, Russians as well as Germans.

I have brought out the light side and the dark side of Siberia according to my best knowledge and conscience. In conclusion I only still have to ease again, at least somewhat, the mind of the reader, on whom the description of the latter perhaps made too gloomy an impression, by a few words about the life in the larger towns.

647 Irkutsk is the seat of the governor general of East Siberia, the emperor's representative who is appointed from the highest governmental spheres, the governor of Irkutsk, the chief administration of Siberia, in which each of the imperial ministries is represented by a high official, and, finally, a rather large number of general officers with corresponding staffs. All these high-ranking gentlemen, most of whom come here directly from the capital, try, of course, to surround themselves as much as possible here with the same comfort that they were accustomed

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647 to there. In contrast to this aristocracy of officials, there is the
647 aristocracy of finance, represented by many millionaires--the
554 wealthy gold washers and tea wholesalers--and many other well-to-do
511 merchants of the various branches. Even though among most of
these gentlemen culture has not exactly penetrated very deeply--
there are exceptions, incidentally, and some representatives of
haute finance even have a university education--, European luxury
is not at all foreign to them and they like /288/ to unfold it at its
richest in their drawing rooms, with the hospitality innate to Rus-
575 sians of all standings. In addition, two public clubs, the Aristo-
crats Club and the Merchants Club, which have separate locales in
winter, but in summer have a common one in the so-called Direc-
tors Garden, offer all kinds of diversions, balls, dinners, children's
parties--I have never seen such gigantic and beautifully decorated
545 Christmas trees as in the Merchants Club in Irkutsk. A very nicely
decorated theater with a permanent troupe, which is sometimes
even joined by guests from European Russia, enjoys good attendance.
The "Beautiful Helena" and "Orpheus in the Underworld" are
presentations that are very well known and always enthusiastically
greeted by the local philistine, who otherwise may have heard
little enough about Europe.

Thus amusements are amply provided for in every respect, but
intellectually, too, the town is by no means as backward as one
815 might be inclined to assume in Europe. I have already frequently
575 mentioned the Siberian Section of the Imperial Russian Geographi-
cal Society with many members and very active in the exploration
of the country, whose sponsorship is undertaken by the governor
general in office. Besides frequent meetings of the members,
whose most important works are published in a separate, widely
distributed journal (*Petermann's Geographische Mittheilungen* often
quotes the *Iswjéstija* /Izvestia/, i.e., reports of the Siberian
Section of the Imperial Russian Geographical Society), the society
also aims at instructively influencing wider circles through popular
816 lectures, which have a very grateful audience. A second scientific
575 society is the Siberian Section of the Imperial Russian Technical
874 Society, through whose initiative the /289/ technical school
mentioned earlier and an experimental farm
were established.

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mentioned earlier and an experimental farm were established.
87 Besides this technical school there are the following educational
institutions: a classical Gymnasium with 200-300 pupils and about
60 boarders, whose expenses are in large part paid by the crown
and who are usually provided for by means of scholarships upon
departing for the university, a training college for teachers and
a divinity school, a district school, and various elementary
schools; for girls, an educational institution for noblewomen, a
Gymnasium for girls, and several lower schools. There is no
lack of scientifically trained men, as the existence of the two
above-mentioned learned societies shows; I merely want to note
that the Founders Day of the University of Dorpat is annually
celebrated in Irkutsk, sometimes by as many as ten former mem-
bers of this university; the other Russian universities are, of
course, also represented here, especially the University of Kasan.
One also finds very able spirits among the learned military men.

648 Strangers passing through are not too rare, particularly mem-
bers of the various European embassies in China and Japan, who
prefer the overland trip to the long sea voyage and usually make a
longer stop in Irkutsk as the principal town on the entire route.
During my Olenek journey, even a member of the imperial
family, the Grand Duke Alexeí Alexándrowitsch, coming with his
retinue from the Pacific Ocean, honored the city with a visit of
several days. Of foreigners residing here there are to be men-
tioned in particular the Chinese, who have their own stores,
and, among the Europeans, the Danes, who take care of the very
considerable correspondence in foreign languages on most of the
stations of the European-Chinese telegraph line.

361 I have described Irkutsk as I came to know it. Since then
731 the above-mentioned terrible /290/ fire in the summer of 1879
destroyed precisely the best parts of the town, with the most pub-
lic buildings. In the first period after this misfortune the situation
of the inhabitants was indeed very sad, but it is certainly not to
be doubted that the city will soon recover from this blow and rise
342 up out of the ashes more beautiful than ever. That is, up to then,
[133] with few exceptions, it was almost solely the crown buildings and

/290 cont./

342 133 churches that were built out of stone, whereas the local financiers, with incomprehensible obstinacy, built their often very spacious dwellings out of wood, allegedly out of fear of the fairly frequently recurring earthquakes. As long as Irkutsk has stood, however, these have never caused any destruction of any consequence, and only the many spires show significant deviations from the vertical, which, however, are probably to be ascribed more to careless construction than to earthquakes, since in general in this connection the construction materials come into consideration much less than the more or less solid type of construction, but Irkutsk has been afflicted by conflagrations every year, and the safest way to avoid this danger is to execute all the larger structures in stone. The most recent large fire will certainly have had a favorable influence in exterminating the old inherited prejudice.

361 Besides Irkutsk, and apart from the towns of the Amur country and the coastal region, with which I have not become acquainted, there are also to be named as rather civilized towns of East Siberia probably only Krassnojarsk /Krasnoyarsk/ and Jesisseisk /Yeniseisk/, in which, to be sure, things are much quieter than in the capital, Irkutsk, but in which some social life and a European educated society, even though consisting of only a few persons, are to be found. In this respect West Siberia stands significantly higher. Omsk, Tomsk, Barnaül, but especially /291/ Jekaterinenburg /Yekaterinburg/, lying closest to Europe and belonging to it administratively, have been described to me as civilized in every respect by acquaintances who have lived there for some time, and I can trust their accounts, which, incidentally, were confirmed by my own, to be sure, only cursory, travel impressions; thus in social respects these Siberian towns stand much higher than many government towns in European Russia significantly surpassing them in number of inhabitants.

It would please me if the present book and particularly this concluding chapter contributed to spreading at home and abroad correct conceptions about Siberia, which, to be sure, to a considerably higher degree than European Russia, is disparaged by sometimes absolutely ridiculous and simply unfounded prejudices. How many of my countrymen are carrying on their calling in these

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/291 cont./

100 remote regions, driven there by duty or necessity, often against their wishes. May they draw from my book the certainty that it is really not as bad there as is often believed in Europe. May they go with joyful spirit to contribute their mite to the civilization of a land which a brilliant future certainly awaits one day! /Appendix I, pp. 292-300, is omitted in the translation; see the foreign text./

/301/ Appendix II

Survey of the Geological Conditions on the Lower Tunguska

128 114 In describing the Olenëk journey I endeavored to give an account of the geological conditions of the regions traversed by us, but gave only a little about the Tunguska in this respect, because, since we traversed the upper part of it in winter, we no longer paid any attention, and, on account of the deep snow, could not pay any, to the geological character of the bank, which had been carefully studied by Czekanowsky the previous summer. The purpose of the following pages is to fill in this gap to a certain extent, for which I have taken the material chiefly from the short travel reports published in Russian by my deceased traveling companion and some comments by the academician Fr. Schmidt.

133 Both at the village of Podwolótschnaja /Podvoloshnaya/, where the river changes from its heretofore northeasterly direction to a primarily northerly one, and at the village of Werchne /Verkhne/ Korélinskaja lying about 100 versts upriver, the watershed between the Tunguska and the Lena shows numerous rock outcroppings of an intense red color -- one such near the latter village is expressively called Kirpítschny-Jar, i.e., brick rock--consisting of /302/ calcareous sandstone, probably the same as that which covers the banks of the Lena for long stretches, mixed with strata of clay, chalk, and quartzite. In many places this stone is rich in petrifactions--cephalopods, brachiopods, snails, bivalves, even trilobites--but the number of species is relatively small. Up to now the horizon of these strata has not been definitively determined, for whereas Czekanowsky was at

/302 cont./

133 first inclined to regard them as Upper Silurian, the geologist Dupont, in examining the collections, found several species among them which are identical with Devonian ones from Belgium. Among the stones present in these red strata there are to be mentioned especially oölitic limestone and gypsum, which are also widespread in the southern parts of the government of Irkutsk.

Farther downstream, particularly near the villages of Daníłowa and Potjómino and in a few places below them, besides the outcroppings of these red stones, others of an obviously highly metamorphosed fossil-less limestone appear. The profile near the village of Potjómina permits a conclusion about the age of this limestone, since it here forms the stratum underlying the red Paleozoic layers. The latter run along the river up to about the church-village Preobrashenskoje /Preobrazhenskoye/ and also contain numerous salt deposits, about which I have spoken earlier. From here on most of the rock outcroppings visible along the river bank consist of trap, which shows, sometimes more clearly, sometimes less, a columnar structure and acts very strongly on the magnetic needle, as I had an opportunity to observe in particular in the village of Jerbochotschón /Yerbogachen/, which is built on traprock. The inclination here was about 1 1/2°, the declination about 6° too great, and the horizontal intensity considerably too low. By means of my magnetic observations, /303/ by identifying a significant anomaly on the lower course of the Tunguska, at the mouth of the Teméra, I even succeeded once in proving the presence of trap under my instrument, which Czekanowsky had already surmised beforehand, although it was covered by sand.

Between the trap and the related wacke, stratified rocks are also found here and there at three places from Preobrashenskoje to Jerbochotschón. The strata themselves are sharply inclined and at the third place from Jerbochotschón, where they are best observed, contain a shiny, laminate lignite and argillaceous sphaerosiderite, as well as petrified wood in considerable amounts and some traces of fossils: a Limnadia (*Estheria* *middendorffii* Jones) and ferns, probably *Asplenium* *whitbiense*. It may be

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/303 cont./

133 concluded from these remains that these strata are identical with the coal-bearing Irkutsk strata that Heer (1) has designated as "Brown Jura" (Dogger).

While from Podwolotschnaja on, where the watershed with the Lena slopes quite steeply toward the Tunguska and, according to our barometric calculations, lies 562 Russian (English) feet above the river, the river valley in general is flat, and even the watersheds between the tributaries scarcely exceed a height of ten fathoms, from Preobrashenskoje on the region becomes more mountainous and the height of the mountains increases accordingly. The terrace formation characteristic of trap predominates, appearing in all forms from mighty table mountains covering an area of about 200 square versts to almost /304/ perfectly regularly formed conical mountains. I carried out several triangulations here and from them calculated the following results for the heights of the mountains. The three mountains climbed by us, Pangchá, Baljúna, and Tschálbyschewa, were determined barometrically; the heights are given in Russian (English) feet above the nearest river level:

Pangchá	225'
Baljúna	877'
Dogdonjó, northwest end	1386'
Dogdonjó, southeast end	1379'
Irbó	1026'
Lower Kagílja	871'
Middle Kagílja, north end	927'
Middle Kagílja, south end	881'
Conical mountain in the Urélj Range	1219'

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[113] 1. Professor O. Heer: Beiträge zur Juraflora Ostsibiriens und des Amurlandes /Contributions concerning the Jura Flora of East Siberia and the Amur Country/. Mémoires de l'Acad. Imp. des Sciences de St. Pétersbourg, Series VII, Vol. XXII, No. 12, p. 14.

Tungus RU5

/304 cont./

133

C'straja Werschína	1750'
Longaschén, south end	1972'
Longaschén, north end	1929'
Lower Kórmoë	1998'
Mountain not far from the Taimúra mouth	1937'
Tschálbyschewa.	1989'
Kútingna	2071'

The last five mountains (on which snowdrifts remain throughout the summer) show such a correspondence in height that they may almost be regarded as equally high--the slight differences may be attributed almost solely to refraction, not taken into consideration, and observation errors. Thus there is reason enough to assume that all these mountains are remnants of a huge rock plateau belonging to the trap formation, which only subsequently, through erosion and decomposition, separated into individual groups of mountains. We can get an approximate idea of the extent of this plateau if I add that from Longaschén /illustration appears here/ /305/ to the Kútingna the straight line distance is over 600 versts and that also, as I have already said above on p. 53, a mountain on Lake Syrungna, which is at least 200 versts to the north from Longaschén, exhibits the same height and thus probably belongs to the same high plateau.

The trap formation along the Tunguska alone extends about 1,800 versts long and embraces here a terrain of six degrees of latitude and nearly 20 degrees of longitude. But this by no means marks the boundary of the enormous area of volcanic rock; the high trap mountains which we noticed on the upper course of the Olenék, and, indeed, even much farther downstream, as well as the trap ranges on the right bank of the Jenissei /Yenisei/ (the Noril Range, according to Schmidt), which, according to Lopatin, even extend to the Arctic Ocean (1), indeed, perhaps even to the

[113]

1. Fr. Schmidt, Mammuthreise /Mammoth Journey/. Mémoires de l'Acad. Imp. des Sciences de St. Pétersbourg, Series VII, Vol. XVIII, No. 1, p. 9.

Traprock on the Níshnaja /Nizhnyaya/ Tunguska.

133
137

51: Müller--180 N-2 (1873-1875) 1882 RV2 Yakut

Tungus RU5

/305 cont./

133 Pjassina and Boganída, from where Middendorff brought basaltic
rock (2)--probably all these belong to one and the same volcanic
elevation, which therefore here reaches an extent such as is
probably hardly reached at any other place on the earth's surface.

133 Everywhere here one finds the clearest traces showing that
135 volcanic action broke through the strata deposited earlier and
repeatedly completely destroyed and metamorphosed them, indeed that many constituent parts of them were even taken up
into the volcanic substance itself. Included in the midst of the
trap and wacke are pieces of stratified rock, such as a sandstone,
slate with petrifactions, and coal, the size of which varies from
over 100 fathoms down to the most minute splinters. The
original rocks deposited here have been /306/ preserved only in
relatively few places, for instance, on the cliffs of Chólaka and
Jednýgi: in the latter the coal stratum reaches a depth of somewhat less than a meter; here, as at the Chólaka cliff, the stone
is a clay-slate with plant impressions, among which leaves of a
longish shovel-shaped configuration are to be stressed in particu-
[114] lar as characteristic. The horizon of this coal-bearing stratum
is probably different from that of the one found before Jerbochotschén /Yerbogachen/, but this question cannot be definitively
decided until Mr. Schmalhausen of the Imperial Botanical
Garden in St. Petersburg (at present a professor in Kiev), who
has undertaken the study of the fossil plants from the Lower
Tunguska, has finished this work.

Obviously belonging to the same formation are the remaining coal- and graphite-bearing strata below, for besides fern foliage, the above-mentioned shovel-shaped leaves are common to all of them. We found graphite, in part of very fine quality, first mined by Mr. M. K. Ssídorow, who was most laudably known for his efforts to establish the sea route to the Jenissei /Yenisei/, in three places on the lower course, distributed over

[113] 2. v. Middendorff, Sibirische Reise /Siberian Journey/, Vol. I, Pt. 1, pp. 198 f.

Tungus RU5

/306 cont./

133 a distance of about 60 versts--above the mouth of the lower
135 Tschálbyschewa, a few versts below the same river, and below the mouth of the Tschenkókta. Large blocks, already trimmed, even lie here ready for transport.

Besides these inclusions of coal-bearing rocks, in many places the trap contains magnificent zeolites of considerable size, and, finally, not far from the mouth, limestone, which, according to the fossils contained in it, is to be included with the Silurian period, in part, as at the mouth of the little stream Anakít, highly metamorphosed and obviously, in the same way /307/ as the coal-bearing strata, dislodged from its original position by the trap. Not until about 50-60 versts before the mouth, from the Teméra on, does the limestone entirely replace the now completely receding trap; a dolomite cliff, Bjelomóschje, rises on the right bank. The chalk is filled with countless beautifully preserved corals, especially Calamopora and Catenipora, and *Pentamerus oblongus*, according to which it must be attributed to the lower strata of the Upper Silûrian, a formation which has also developed in the lower course of the Stony Tunguska, as the mining engineer J. A. Lopatin proved in the summer of 1877. All these Silurian fossils are to be studied by the academician Fr. Schmidt.

133 After having briefly described the geological character of the river banks in the foregoing, I am now turning to a consideration of the actual river bed of the Lower Tunguska, which shows some characteristic phenomena corresponding to the trap formation developed along it at such a great height and conditioned by it.

Besides many stones found under the water, which form whirlpools at two places, but whose danger is greatly overrated by the inhabitants along the river, we counted no less than 16 rapids throughout the region of the trap and formed by it, beginning from the village of Shdánowa and ending with the Kossoí Poróg, 70 versts before the mouth. The most important *boljschoí* /bolshoi/, i.e., great *poróg* /rapids/, is about 104 versts above the mouth and quite difficult to pass.

/307 cont./

133 Far more interesting for the geologist, however, are the beds
of shingle, called kórgi by the inhabitants, for the pointing out
of which (1) credit is principally due /308/ J. A. Lopatin, who
observed them in the year 1866 along the Jenisei//Yenisei/ from
the mouth of the Stony Tunguska up to the village of Dúdino,
that is, from about 62-69° latitude. They have also developed
very characteristically along the Lower Tunguska, along both
banks of the river, while along the Jenisei, with few exceptions,
they are confined to the stony right bank and are quite obviously
to be attributed to the action of the river ice in the spring. They
do not occur farther south, even where there are steep river
banks, probably solely because the ice has less power. On some
of the more northerly rivers, such as along the Olenék in particular,
where we barely found scant traces of them, but all the
more sand banks, the reason for their absence may lie only in
the slight hardness of the type of rocks bordering the river valley.
133 They have formed this way along the Tunguska--in some places
135 on the lower course one korgá is strung out after another--because
with a heavier formation of ice and the strong current as a result
of the narrow river bed--at Podwolótschnaja the width of the
river is only 35 feet, at its mouth scarcely one verst, and where
the kórgi are the most numerous, not more than a third to at
most three-fourths of a verst wide--the shingle of the river, which
increases annually, especially along most of the lower course, by
disintegration of the rock walls reaching close to the surface of

[113] 1. J. A. Lopatin, "Ueber die vom Eise geschrammten und geschliffenen Felsblöcke und anstehenden Felsen an den Ufern des Jenissei nördlich vom 60° der Breite /On the boulders, scarred and cut by the ice, and outcrop rocks along the banks of the Yenisei north of 60° latitude/." (In the Russian language in the Publications of the Imperial Russian Geographical Society, Vol. IV.)

Tungus RV5

/308 cont./
133 the river, consists largely of very hard rocks, for, with the exception
135 of the few remnants of stratified kinds of rock and in particular
the abundant Iceland spar probably coming from the tributaries,
one finds only trap and large quantities of quartzite, chalcedony,
and sserdolithe (carnelian).

133 /309/ This shingle, seldom sharp-edged, mostly rounded on all sides, and, when it has finally come to rest and in places is pressed together into the finest pavement redounding to the honor of any city, more or less well polished on top, and in some places clearly scarred, analogous to similar phenomena of the glacial period, forms the kórgi, which in part, with their upper sections, already project above the highest water level occurring at present, which is clearly marked on the rocks of the shore, and whose origin must therefore be ascribed to a very remote past, since which the under stratum of the river, consisting of hard rock, has sunk through *erosion and the water level has lowered. Toward the riv*er the kórgi form a more or less steep, regularly formed slope of stones lying loosely on one another, which very gradually rises up against the wall of the bank and here forms the pavement described above. Downstream the korgá forms a promontory jutting out, at a very different angle, into the river, which forms the culmination point of the whole, and falls off most steeply toward the bank side, here, too, generally in large, sharp-edged blocks, where a more or less extensive cove, according to the size of the korgá--the largest ones are ten fathoms and more in diameter--is found, which is generally sandy toward the shore. The kórgi contract the river bed, already narrow in itself, still more and thereby accelerate the current. In many places they alone make navigation possible, for without their natural harbors, distinguished by a slight reverse current, a landing at the steep cliffs sloping toward the shore would not be possible.

/310/ The presence of a tremendous area covered with volcanic rocks in northern Siberia gave rise to the rumor that active volcanoes still existed there soon after the conquest of this country. The first authors on Siberia in the seventeenth century mention them, for example, Isaak Massa, who puts them east of the

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/310 cont./

133 Jenissei, and Vitsen, who speaks of a burning mountain on the Taimūra, a tributary of the Lower Tunguska. In the eighteenth [135] century, too, the statements frequently differed. Georgi, Strahlenberg, and Gmelin put all the burning mountains in the [114] vicinity of the Chátanga /Khatanga/, but the latter, in contrast to the earlier statements, speaks of a huge coal seam that caught fire. Such was actually present, and, to be sure, at the place designated by old Vitsen, as Middendorff learned (1)

[113] 1. v. Middendorff, Sibirische Reise /Siberian Journey/, Vol. I, Pt. 1, p. 214.

from Cossacks and Tungus in the forties of this century, and which Ssidorow confirmed by personally seeing it 20 years later. We could not obtain any information on this coal bed located about 50 versts above the mouth of the Taimūra and burning for over two centuries already, because we had to traverse the nearest stretches of the Tunguska without a guide familiar with the region. Furtheremore burning coal seams are too widespread a phenomenon to arouse any special interest. But that an actual volcano active even today or at least in the last centuries might exist in northern Siberia can /311/ in all probability be denied, since Middendorff and we simply could get no information about any such from the natives searching about in all directions in connection with hunting. Also, so far as I learned, earthquakes, which would surely not be absent in an area still active volcanically, are unknown along the Tunguska. /Appendix III, pp. 312-326, is omitted in the translation; see the foreign text. The errata listed on p. 326 have been corrected in the text of the translation. The end map follows./

102

131

133

A	B	C
D	E	F

Chart of Positions of End Map
[Facing End Map]

[END MAP -A]

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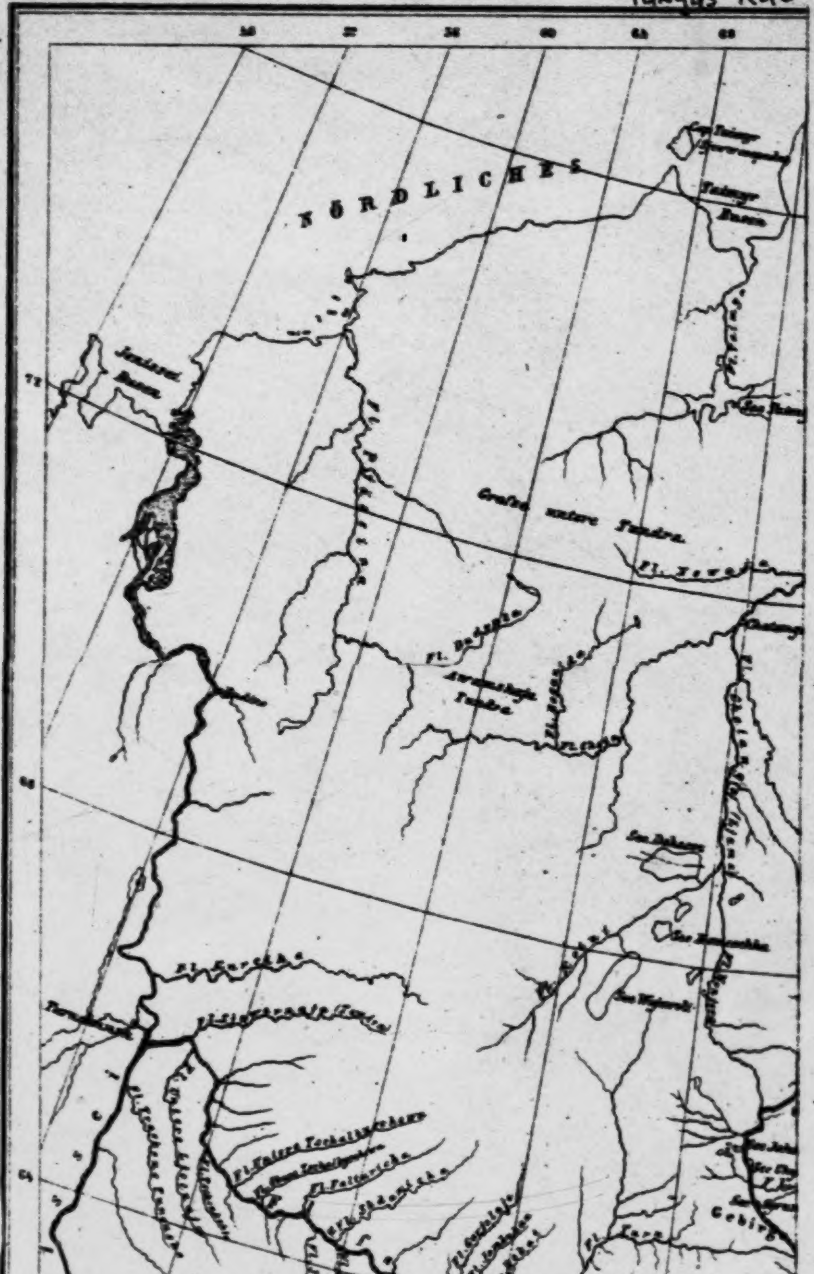
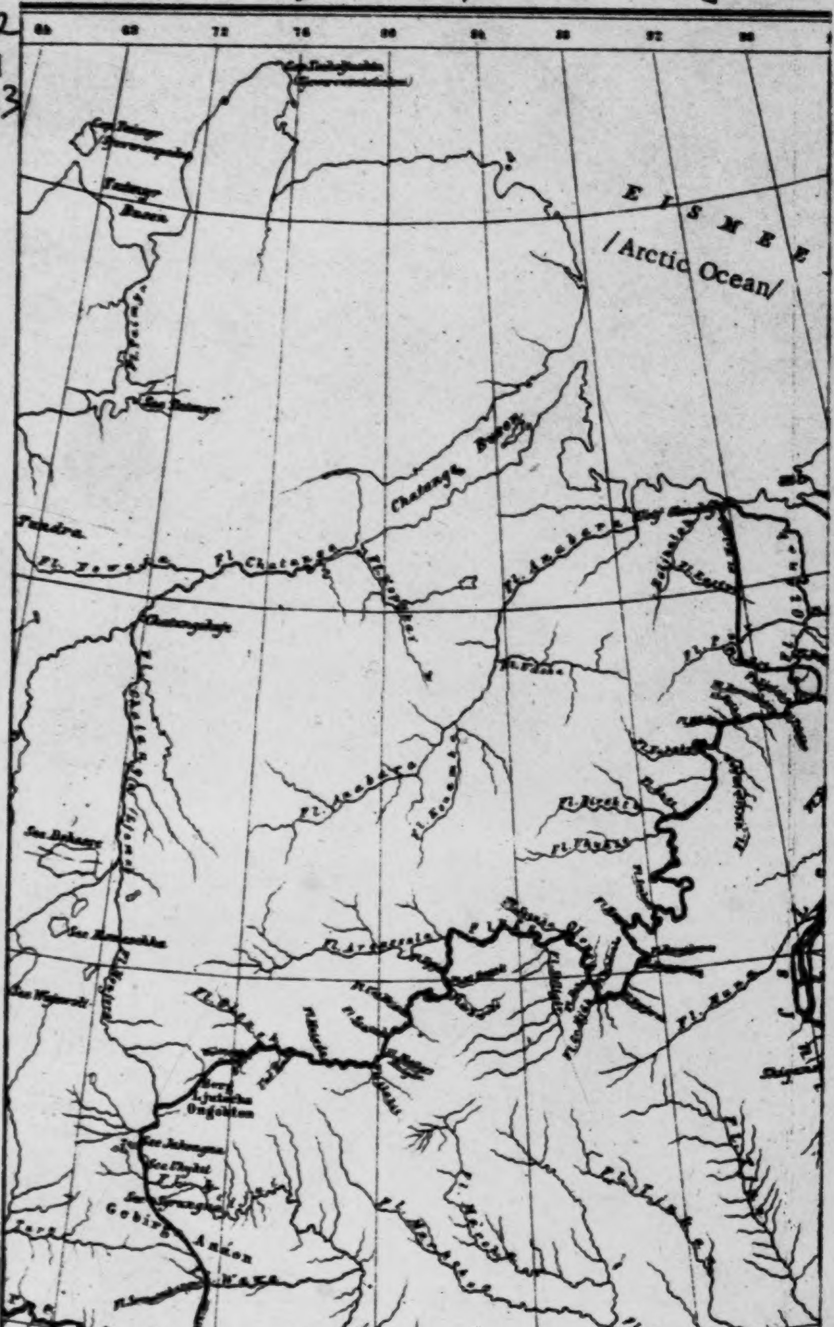
51: Müller--186 N-2 (1873-1875) 1882 RV2 Yakut RV2
Tungus RU5


NÖRDLICHES
Jenissei Busen
Grosse untere Tundra
Fl. Dudypta
Awamskaja Tundra
Chatanga
Fl. Kurejka
Fl. Bachta
Gebirg

51: Müller--187 N-2 (1873-1875) 1882 RV2 Yakut RV2

[End map - B] Tungus RU5

T
Y
102
131
133


72
76
92
Taimyr Busen
E I S M E E
/Arctic Ocean/
Chatanga Busen
Tundra
Fl. Jewaja
Fl. Chatanga
Fl. Anabara
Berg Ljutscha Ongokton
Gebirge Ankon

51: Müller--188   N-2   (1873-1875) 1882   RV2 Yakut RV2

[End Map- C] Tungus RU5

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Y
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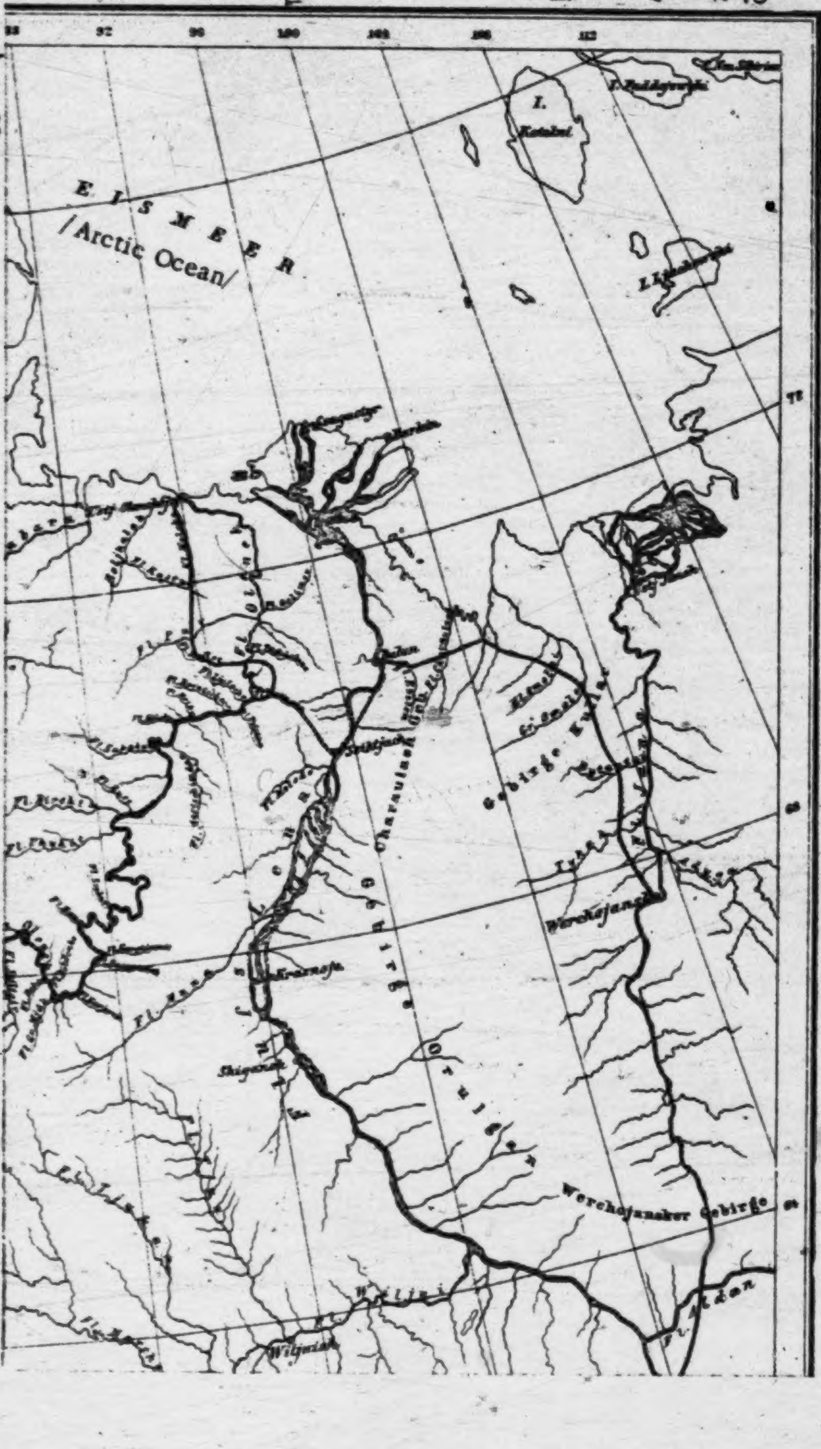
131
133


92
96
100
104
108
112
E I S M E E R
/Arctic Ocean/
I. Kotelnoi
I. Ljachowski
72
Bulun
Olenek
Charaulach Gebirge
Gebirge
68
Werchojansk
Shigansk
Orulgan
Werchojansker Gebirge
64
Wilui
Wiljuisk
Fl. Aldan

51: Müller--189   N-2   (1873-1875) 1882   RV2 Yakut RV2

[End Map.- D] Tungus RUS

T
Y
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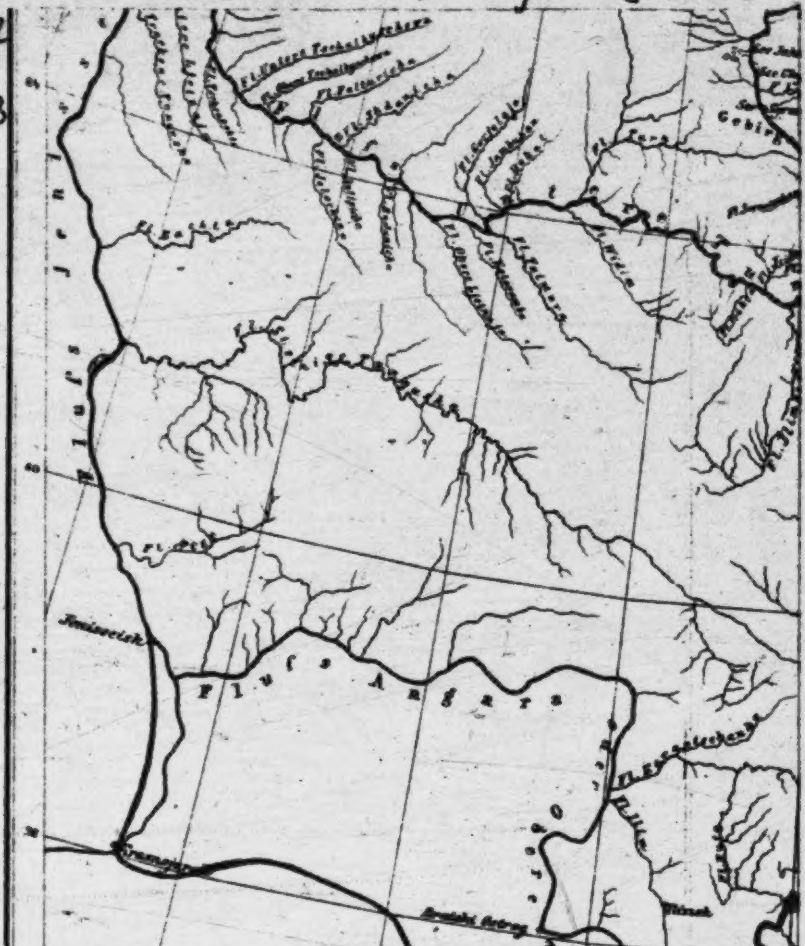
133

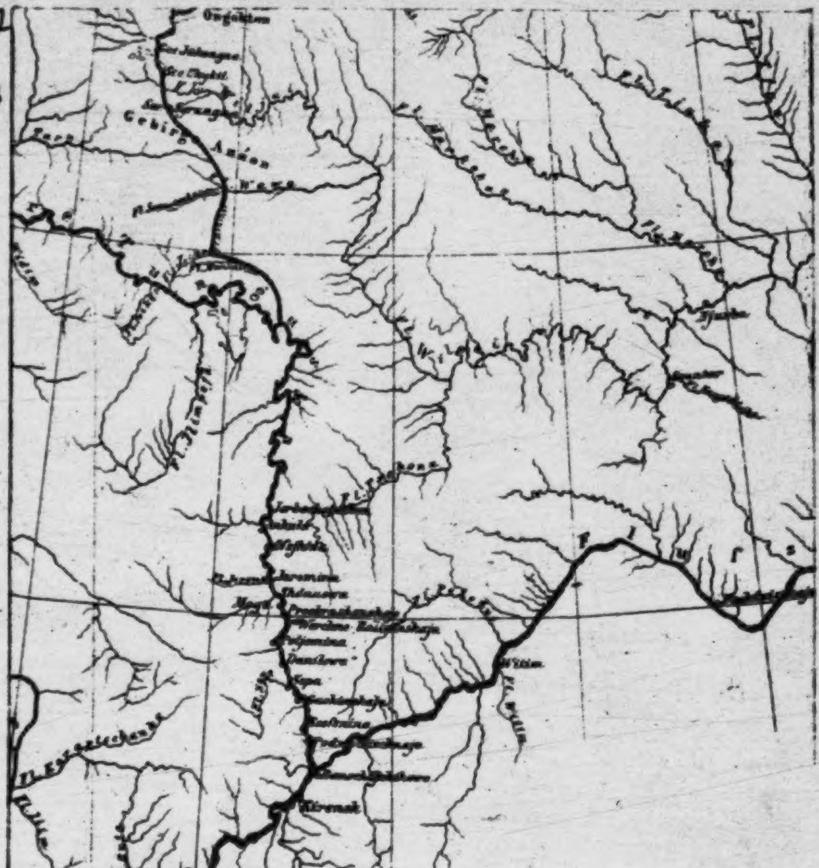

Reiseroute Müller's und Czekanowski's.
Fluſs Angara
Jeniseisk
Bratski Ostrog
Irkutsk
Gebirg
64
68
72
76

/Müller's and Czekanowsky's route of travel./

[End Map - E] Tungus RV5

T
Y
102
131
133

51: Müller--190 N-2 (1873-1875) 1882 RV2 Yakut RV2


Gebirg
Aldan
Witim
Fl. Witim
Kirensk
Irkutsk
Baikal See
76
80
84

F. A. Brockhaus' Geogr.-artist. Anstalt, Leipzig.

[End Map - B] Tungus RU5

T 51: Müller--191 N-2 (1873-1875) 1882 RV2 Yakut RV2

Y

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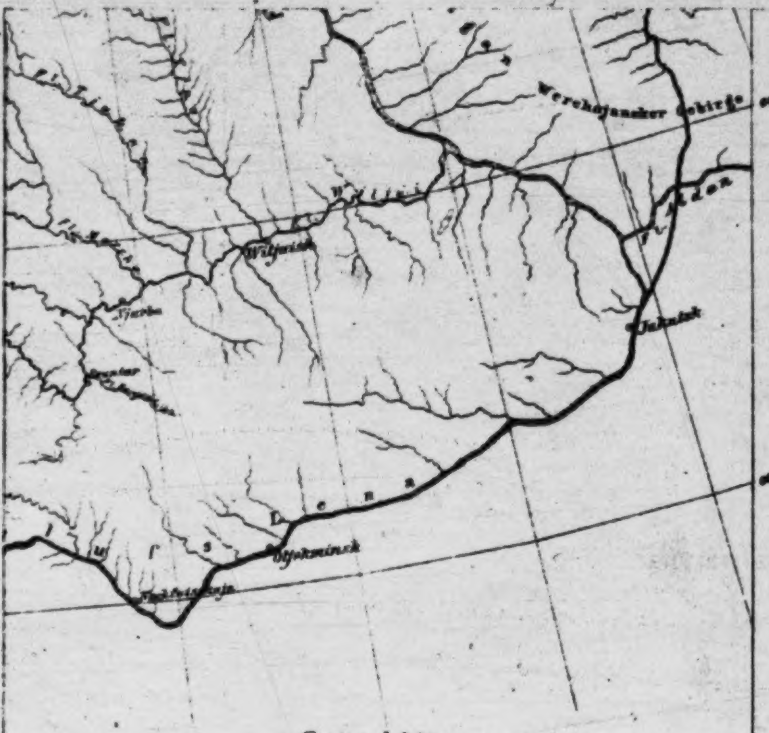
133


Werchojansker Gebirge
Wiljui
Wiljuisk
Njurba
Suntar
Aldan
Jakutsk
Lena
Olekminsk

General Map
of the
Northernmost Part of East Siberia
between the Jenissei /Yenisei/ and Jana /Yana/ Rivers.

From the surveys
by
Ferdinand Müller and Alexander Czekanowsky.

* * *

Scale 1:7,840,000.

7 versts - 1 geogr. mile

Leipzig: F. A. Brockhaus